

ABSTRACT

Title of Dissertation: ADOLESCENTS ON THE LOOKOUT FOR SUICIDAL FRIENDS ON SOCIAL NETWORKING SITES

Jill Berger, Doctor of Philosophy, 2013

Dissertation directed by: Professor Gary D. Gottfredson
Department of Counseling, Higher Education, and Special Education

There are opportunities to identify and intervene with suicidal adolescents through social media outlets. This study explored the effectiveness of using two types of persuasive messages to encourage adolescents to get help for Facebook friends who might be suicidal. Facebook-using adolescents ($N = 299$) were recruited to participate in an online survey within which a randomized experiment was embedded. More than one third of participants reported seeing Facebook friends post about suicide. Participants were randomly assigned in a 2x2x2 design to exposure or no exposure to suicide prevention information, a suicide intervention story, and a pre-test assessment. The effects of these conditions on participants' knowledge of what to do and their intentions to get adult help were examined. Participants exposed to information were more likely to report that they knew what to do for a suicidal friend; whereas those exposed to the story were more likely to express intentions to get adult help when presented with suicidal scenarios. Stories depicting social role models appear to be an effective way to encourage adolescents to take appropriate actions when friends post content suggestive of suicide on

Facebook. Further research exploring how youth suicide prevention efforts can be integrated with social media is warranted.

ADOLESCENTS ON THE LOOKOUT FOR SUICIDAL FRIENDS ON SOCIAL
NETWORKING SITES

by

Jill Berger

Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2013

Advisory Committee:

Professor Gary D. Gottfredson, Chair
Assistant Professor Paul Gold
Professor Denise C. Gottfredson
Assistant Professor Matthew Miller
Associate Professor William Strein

© Copyright by
Jill Berger
2013

Acknowledgements

I would like to offer special gratitude to my advisor, Gary Gottfredson, for his unwavering enthusiasm for this project and dedication to my professional growth over the last six years. To my family, boyfriend, cohort, and friends: I could not have made it through graduate school and the completion of this study without your steadfast support and patience. Thank you for being part of this journey and believing in me every step of the way.

This research would not have been possible without the hundreds of teenagers who volunteered their time and input. I would like to acknowledge supporters of my study in the community, particularly Mark Pike, long-time friend and Facebook employee who helped with recruitment. I would also like to thank Ivan Croft and J.T. Ridgely, Howard County School Psychologists, for sharing their passions for suicide prevention and crisis response with me.

“Look for the helpers. You will always find people who are helping” (Fred Rogers, quoting his mother)—to all the helpers out there, thank you for making the world a better place.

Table of Contents

Acknowledgements.....	ii
Table of Contents.....	iii
List of Tables.....	v
List of Figures.....	vii
Adolescents on the Lookout for Suicidal Friends on Social Networking Sites.....	1
Social Media Use Among Youth.....	3
Social Networking and Youth Suicide.....	8
Challenges to Being a Good Friend Online.....	9
Youth Suicide.....	13
Prevention Efforts.....	15
Method.....	22
Research Design.....	22
Procedure.....	23
Participants.....	26
Missing Data.....	27
Measures.....	28
Demographic Characteristics.....	28
Hypothetical Scenarios.....	20
Treatment and Control Conditions.....	29
Exposure to Troubling and/or Suicidal Content.....	30
Level of Concern.....	30
Intentions to Get Help.....	31

Perceived Knowledge	31
Additional Exploratory Measures	32
Results	32
Question 1	32
Question 2	33
Questions 3 and 4.....	35
Exploratory Analyses.....	37
Discussion	38
Limitations	41
Virtues and Implications	42
Appendix A: Facebook Page	57
Appendix B: Sample of Advertisements for Recruiting Participants on Facebook.....	58
Appendix C: Questionnaire.....	59
Appendix D: Suicide Prevention Information	65
Appendix E: Suicide Intervention Story	66
Appendix F: Control Message	67
Appendix G: Means and Standard Errors by Group without Covariate Adjustments.....	68
Appendix H: Analysis of Covariance Tables	70
References.....	72

List of Tables

Table 1 <i>Demographic Characteristics of Participants</i>	45
Table 2 <i>Correlations Between Level of Concern Variables for Scenarios at Pre-test and Post-test</i>	46
Table 3 <i>Correlations Between Pre-test Scenario Responses to Intentions to Get Help Items</i>	47
Table 4 <i>Correlations Between Post-test Scenario Responses to Intentions to Get Help Items</i>	47
Table 5 <i>Means and Standard Deviations for Items Measuring Exposure to Suicidal Content, Level of Concern, Intentions to Get Help, and Perceived Knowledge</i>	48
Table 6 <i>Frequency With Which Teenagers Report Seeing Facebook Posts That May Reflect Suicide-Related Content: Percentage Distribution for Each Type of Post</i>	49
Table 7 <i>Teenagers' Report of Level of Concern and Intentions to Get Help on Suicidal Scenarios and Their Perceived Knowledge of What to Do: Percentage Distribution for Each Item</i>	50
Table 8 <i>Teenagers' Report of Intentions to Get Help from Adults and Take Other Actions After Reading Suicidal Scenarios: Means, Standard Deviations, and Standard Errors of the Means of Pre-test Responses</i>	51
Table 9 <i>Means by Group: Participants' Level of Concern, Intentions to Get Help, and Perceived Knowledge of What To Do for Suicidal Friends</i>	51
Table 10 <i>Teenagers' Concern for Persons in Suicidal Scenarios: Covariate Adjusted Means and Standard Errors for Groups Exposed or Not Exposed to the Suicide Prevention Information and Successful Suicide Intervention Story</i>	52

Table 11 <i>Teenagers’ Intentions to Get Help for Persons in Suicidal Scenarios: Covariate Adjusted Means and Standard Errors for Groups Exposed or Not Exposed to the Suicide Prevention Information and Successful Suicide Intervention Story</i>	52
Table 12 <i>Teenagers’ Perceived Knowledge of What To Do for Suicidal Friends: Covariate Adjusted Means and Standard Errors for Groups Exposed or Not Exposed to the Suicide Prevention Information and Successful Suicide Intervention Story</i>	53
Table 13 <i>After Reading a Suicidal Post on Facebook, What Would You Do? Participants’ Qualitative Responses Organized by Theme</i>	54

List of Figures

Figure 1. Random Assignment of Participants to Groups55

Figure 2. Flow Chart of Items on the Questionnaire56

Adolescents on the Lookout for Suicidal Friends on Social Networking Sites

Parents, educators, and mental health professionals working with young people are keenly aware of how new technology influences the daily lives of children and adolescents. The social networking phenomenon, in particular, has sparked excitement and concern in recent years. Social networking sites or social media facilitate social interaction over the Internet, mainly the sharing of information among people within a social network (O’Keefe & Pearson-Clarke, 2011). Popular sites include Facebook, Twitter, Pinterest, Instagram (Duggan & Brenner, 2013), and more recently, a number of social networking sites geared toward children as young as age seven have emerged (Common Sense Media, 2012a). Contemporary social media have captured the attention of youths and young adults, expanded socialization, increased communication, and provided opportunities for learning and access to information (Ito et al., 2008; O’Keefe & Pearson-Clark, 2011). As with most advances in technology, there are also a host of concerns about the influence of social media on children’s lives (e.g., Common Sense Media, 2009; Rideout, Foehr, & Roberts, 2010). These concerns range from worries about children’s safety online to the fear that friendship quality will suffer if the Internet becomes the primary vehicle for interaction (Takeuchi, 2011).

For parents, educators, mental health professionals, and other adults working with youths, there are new challenges to address. Young people may be more technologically savvy than the adults in their lives; a recent study reported that a third of parents learned something technical from their child aged 3 to 10 (Takeuchi, 2011). Raising awareness about social media among adults and helping parents understand the risks have been primary avenues for preventing the youths’ misuse of social networking sites. There

have also been a number of efforts to teach children to use the Internet in a safe, smart, and productive way (Common Sense Media, 2010). Social media use is on the rise among youths, with 51% of adolescents checking social media sites more than once a day and 22% checking these sites at least 10 times per day (Common Sense Media, 2009). Thus, exploring ways to make the influence of social media positive and to proactively address concerns, rather than trying to stop or limit youths' use of social media, are promising directions for future programs and research (Ito et al., 2008).

In recent years, much news and commentary media attention has focused on the roles that social media have played with young people in crisis. The research community has not kept pace with the rapid changes in technology that have sparked many hypotheses about the effects of social media on children's mental health. For example, results from correlational studies linking Facebook use to depression have caused a flurry of concern over so-called "Facebook depression" (Davila et al., 2010). One study also linked Facebook use to higher risk of eating disorders in adolescent females (Nauert, 2011). Another major concern for parents and educators has been cyberbullying, in which traditional bullying behavior can become more widespread and damaging when posted online (Hinduja & Patchin, 2010). Popular media have also implicated social networking activity in many publicized cases of youth suicide. Researchers are now struggling to empirically address the many questions that have arisen as social networking becomes an integral part of young people's everyday lives.

The current study fills two gaps in the research on children's mental health and social media. First, this study examined the extent to which adolescents on social networking sites are exposed to suicidal content and how they typically respond. Second,

this study explored the potential for social media to be used in suicide prevention efforts by encouraging adolescents to look out for warning signs and get help for friends who may be suicidal.

Social Media Use among Youth

New technology has increased media use among young people over the last decade. According to a 2012 survey, 93% of teenagers ages 12 to 17 have their own computer or access to one at home (Madden et al., 2013). Since the turn of the century, youths are spending approximately an hour more per day using media and several hours more per day exposed to media (Rideout, Foehr, & Roberts, 2010). Social networking, in particular, has become an increasingly popular activity for young people. The average adolescent spent about 27 minutes per day using a computer for social networking in 2009 (Rideout, Foehr, & Roberts, 2010). In the last several years, a number of studies of youth and their parents have described the types of social media used, frequency and purpose of social media use, and perceived advantages and disadvantages of social media in young people's lives (e.g., Madden et al., 2013; Common Sense Media 2012a, 2012b, 2009; Lenhart et al., 2011; Gutnick, Robb, Takeuchi, & Kotler, 2010; Ito et al., 2008; Lenhart et al., 2007).

A recent study conducted by Common Sense Media (2012a) recruited adolescents across the country to participate in a survey about social media use and youth perspectives on its influence on their lives. Researchers broadly defined social media to include social networking, blogging, and chatting through online games and other virtual systems. According to the study, most adolescents (90%) used at least one type of social media, 83% of adolescents had visited a social networking site (e.g., Facebook, Twitter,

MySpace, GooglePlus), and 75% of adolescents had profiles on a social networking site. Facebook was the primary social networking site used by adolescents, with 68% reporting it as their main site compared to only 8% of adolescents identifying Twitter, GooglePlus, or MySpace as their main site for social networking. Similarly, a 2011 study conducted by the Pew Research Center found that 93% of teen social media users had a Facebook account (Lenhart et al., 2011).

On average, 51% of adolescents checked their social networking site at least daily and 34% checked their site at least twice daily (Common Sense Media, 2012a). An earlier study also found that about half (51%) of adolescents checked social networking sites at least once per day, with 22% checking a site more than 10 times per day (Common Sense Media, 2009). Mobile media devices, such as cell phones with Internet access (i.e., smartphones), portable music players (e.g., iPods), and portable video games, have been described as the next “it” technology for children and adolescents (Gutnick, Robb, Takeuchi, & Kotler, 2010). In 2012, 37% of teenagers owned a smartphone and about half of these teens reported accessing the Internet primarily from their phone (Madden et al., 2013). Recent statistics suggested that 52% of adolescent social networking users have used a mobile device to check social networking sites and 27% mainly check the site from their mobile device (Common Sense Media, 2012a).

Adolescents have been asked about how they perceive social media to influence their lives. When asked about how social networking influences relationships with parents and teachers, only a small number reported a positive effect (6 to 8%) or negative effect (2 to 6%). Among teens, social networking seems to mainly influence peer relations, although teens expressed a preference to primarily communicate with friends in

person (49%) or through texting (49%) rather than through a social networking site (7%). In-person communication was preferred mainly because adolescents viewed it as more fun, felt that it was easier to understand what people meant, and were more comfortable talking about personal and serious things (Common Sense Media, 2012a).

Teenagers on social networking sites generally reported more positive than negative influences of social media (Common Sense Media, 2012a; Lenhart et al., 2011), although 41% of teens reported having at least one experience on a social networking site that ended a friendship, made them worried about going to school, caused problems with parents, or resulted in an in-person argument or physical fight (Lenhart et al., 2011). When asked about specific positive influences, 65% of teens reported having had an experience that made them feel good about themselves and 58% reported having had an experience that made them feel closer to another person (Lenhart et al., 2011). In general, 15% of teens reported that social networking makes them feel better about themselves, compared to 4% who reported that it makes them worse about themselves (Common Sense Media, 2012a). With regard to relationships, 19% reported that social networking makes them feel more sympathetic to others and 7% reported that it makes them feel less sympathetic toward others. About half of adolescent (52%) reported that social networking helps their friendships, compared to 4% who reported that it hurts their friendships (Common Sense Media, 2012a).

When asked about online activities, teenagers reported that they use social networking sites to send instant and private messages to friends, write comments on friends' posts, update their "status" (i.e., post something to their profile about what they are currently doing), post photos and videos, "tag" people in their posts (i.e., link their

posts to other people within their network), and play games (Lenhart et al., 2007). On one survey, about half (54%) of teens reported joining a social networking group in support of a cause, and about a third (34%) used a site to get involved in volunteer activities (Common Sense Media, 2009). In 2011, 69% of teenagers using social media reported that people are “mostly kind” to each other online. However, 20% of teens reported that people are “mostly unkind” to each other online, and the majority of teens (88%) have witnessed meanness on a social networking site (Lenhart et al., 2011). Survey data from 2009 indicated that 37% of adolescents used a social networking site to make fun of other students, 18% had been humiliated, 19% had been harassed or cyberbullied, and 38% knew someone who had been harassed or bullied online (Common Sense Media, 2009). A 2012 survey reported that 34 to 44% of social media-using teens encountered hate speech (i.e., sexist, homophobic, racist, or anti-religious content) on social networking sites often or sometimes (Common Sense Media, 2012a).

Teens may act differently online and say or do things that they would not say or do in person (Lenhart et al., 2011). When asked about the extent of their self-disclosure online, 28% of teens admitted that they had shared personal information on a social networking site that they would not have otherwise shared in a public forum (Common Sense Media, 2009). A vast majority of parents (92%) have reported concerns about their children sharing too much information online (Common Sense Media, 2010).

Lenhart, Madden, Smith, Purcell, Zickuhr, and Rainie (2011) reported on adolescents’ reactions to mean behaviors on social networking sites. Teens were asked about what they witnessed others do and what they themselves typically do when seeing someone behave cruelly to another person through social media. Teens most commonly

reported that they ignored or witnessed others ignoring the situation, suggesting that teens tend to be bystanders in these situations. However, approximately 21% of teens admitted to joining in on the harassment at least once in awhile and 19% of teens reported that they most frequently observe other teens joining in, rather than ignoring the behavior or publicly intervening to help the victim. The majority of teens have at some point defended the victim (80%) or told the aggressor to stop (79%), though only 20 to 25% of teens reported taking these actions frequently. Similarly, 20 to 27% of teens reported that they most frequently witnessed other teens take actions to stop the harassment rather than ignoring the behavior or joining in on the harassment. Lenhart et al. suggested that while many teens appear to be bystanders to online cruelty, teens may offer support for the victim in non-public forums or may deliberately ignore the behaviors to decrease attention toward the aggressor. These situations may be complicated, with no clear indication of who is the victim or aggressor (Lenhart et al., 2011).

Recent studies have begun to explore how people within a social network influence each other's behavior (Bohannon, 2012). Recently, Bond et al. (2012) conducted a collaborative study with Facebook and found that voting behavior in the 2010 congressional elections was increased among Facebook users who were sent messages indicating that their friends had voted. This study highlights the power of social influence and suggests that messages delivered via social media have the potential to change behavior. Further, changing the behaviors of a subset of people could have a large effect if those behaviors are advertised to other people within their social networks.

Social Networking and Youth Suicide

Young people in crisis may use social networking sites as an outlet to express their emotional distress (Olson, 2011). Young people contemplating suicide have used sites such as Facebook and Twitter to reach out for social support. Unfortunately, in many cases that have made the news, these youth did not receive needed assistance from their online social networks and their lives ended tragically. For example, in 2010, Rutgers freshman Tyler Clementi jumped off a bridge, after posting his plan for suicide on Facebook (Foderaro, 2010). In 2011, Ashley Billasano, a Texas high school student, “tweeted” (i.e., posted messages to her online social network) 144 times over 6 hours about her suicide before completing it (Hibbard, 2010). At the beginning of the 2012-2013 school year, a Maryland high school student posted about suicidal plans on Facebook prior to bringing a gun to the first day of school and shooting another student (Associated Press, 2012).

In a recent New York Times article, Hoffman (2012, pp. A1) discussed the potential for mental health professionals to use “dark postings” on Facebook to identify “signs of depression and an early warning system for timely intervention.” Two commentaries posted on the *Psychology Today* website also addressed how social networking sites could be involved in suicide prevention (Sandler, 2009; Bonior, 2011). Both commentaries mentioned the highly publicized, successful suicide intervention through social media, led by actress Demi Moore after receiving a suicidal message on Twitter (e.g., Duke, 2009). There have also been two recent cases where U.S. teenagers have taken steps to help friends who expressed suicidal intention on Facebook, and a third case where an adult reached out to a teenager’s family members after seeing her

suicidal posts on Twitter (Yahoo News, 2012; The Telegraph, 2009; Cook, 2012). All three of these cases were reported to have saved the person from immediate danger.

In 2011, Facebook launched a suicide intervention service that allows users to anonymously report suicidal content posted by friends. The referred person is provided resources, including the opportunity to chat online with a trained counselor through the National Suicide Prevention Lifeline's website. The user who made the referral is also notified that Facebook has addressed the concern (Forbes, 2011). Though there is some debate over whether the new feature will be effective and whether it threatens users' privacy (Shute, 2011), it is noteworthy that Facebook is leading a suicide prevention effort in the social networking community.

With the spotlight on social media's role in youth suicide and new features like Facebook's suicide reporting tool, it seems that young people who post suicidal messages online should be able to get the help they need. To date, no research has examined what young people are doing about suicidal messages posted online by their friends. From the suicide cases that have been publicized, we know that online cries for help are not always answered by friends, family, and others who might read them, and we can only generate hypotheses about why steps were not taken to prevent these tragedies.

Challenges to Being a Good Friend Online

It can be argued that suicide prevention efforts are more challenging when the warning signs occur online; for instance, friends may have difficulty distinguishing a real threat from a lesser concern (Olson, 2011). Twitter reported an average of 50 million tweets (i.e., messages) sent per day on its site in 2010 (Twitter, 2011). Although the number of messages seen by a social networking site user varies, the rate at which a

social media user receives information may contribute to the problem. One brain-imaging study found that adults reacted less quickly when reading about the emotional distress of others compared to when reading about the physical pain of others. Results suggested that “additional time may be needed for... introspective processing” for adults to take in information and experience “emotions about the psychological situations of others” (Immordino-Yang et al., 2009, p. 8024). For social media users who quickly read through others’ posts and messages, there may not be enough time spent on each piece of information to process emotionally charged content and experience feelings of compassion (Immordino-Yang et al., 2009). Further, in a culture where people often air their grievances online, it may be difficult to recognize a true cry for help amid a profusion of daily complaints.

The bystander effect, a social psychology phenomenon of group influences on helping behavior, may also be in effect during these crises. After Kitty Genovese was murdered while bystanders watched and did little to intervene, Latané and Darley (1970) hypothesized that audience inhibition, social influence, and diffusion of responsibility influenced the bystanders who took no action to help, rather than assuming that the bystanders were apathetic to the situation (Markey, 2000; cf. Manning, Levine, & Collins, 2007). In an online social network, people who read distressing messages posted by friends or acquaintances may be less inclined to help for these same reasons. An individual might feel hesitant to intervene in front of a large audience of people in the online social network, view others’ inaction as a sign that there is nothing to be worried about, or look to others to take action.

There is evidence that group size, group cohesiveness, and the perceived degree of danger influence the strength of the bystander effect. Individuals in larger, less-cohesive groups are less likely to intervene (Rutkowski, Gruder, & Romer, 1983). Given that the average Facebook user has approximately 120 friends, with some users having more than 500 friends in their network (The Economist, 2009), it is unlikely that there is a sense of cohesion among people in an individual's social network. Further, bystanders are more likely to intervene when the situation is perceived as dangerous (Fischer et al., 2006), and it may be difficult for untrained individuals to ascertain whether there is a real threat in the content of a friend's Facebook post. Most teens reported ignoring the cruel behaviors of other teens online and observing other teens to ignore these behaviors as well (Lenhart et al., 2011). The majority of teens have at some point taken actions to help after witnessing someone behaving cruelly toward another person online, but less than a quarter of teens frequently engage in behaviors to help the victim. These situations may not be clear-cut, and teenagers may not know what actions would be appropriate to take (Lenhart et al., 2011).

Early research on the bystander effect did not consider the influence of technology on individual's helping behavior, but more recent studies have examined helping behavior during computer-mediated communication. Markey (2000) studied the bystander effect in online chat rooms of 2 to 19 people by creating a user who asked a simple question about making a profile and then recorded the amount of time before someone responded to the request for help. Results suggested a weak but significant positive relationship between the number of people in the chat room and the response time, and also found that asking for help from a specific user decreased the response

time. Despite the study's use of an unemotional and non-threatening request for help, findings about online helping behaviors were consistent with existing evidence that the bystander effect increases with group size and that feelings of personal responsibility increase helping behavior.

Kozlov and Johansen (2010) examined the bystander effect among college student participants who played a video game with virtual bystanders who asked for help. When participants were told to imagine that the virtual bystanders were real people, increasing the number of bystanders significantly decreased helping behavior. Participants were also less likely to help when they were working under time pressure to finish the task. These results also suggest that the bystander effect occurs in virtual environments, even when the participants are only imagining the bystanders as real people. Helping behavior decreased when participants in this study were pressured by time. This latter finding may come into play when social networking users are multi-tasking. A recent study of technology use among youths found that 66% of adolescents multi-task most or some of the time while using a computer (Rideout, Foehr, & Roberts, 2010). If social networking users are completing other tasks while using social media, they may be less likely to offer help.

Rather than assume that social networking users are apathetic to friends in their social network, we may consider the influences on helping behavior in the social media world. Teenagers in crisis might not directly ask for help, thus people within their social networks might not feel obligated to react to posts, statuses, and messages that suggest potential danger or harm. Social networking users receive information at a fast rate, may not have the training to distinguish a threatening situation from lesser concerns, and may

not know what actions are appropriate. Most teens have frequently seen people ignoring cruelty toward others on social networking sites (Lenhart et al., 2011), and they may have witnessed people ignoring other troublesome behaviors. In short, emerging evidence suggests that the bystander effect occurs in online communities and decreases helping behaviors.

Youth Suicide

Given that social networking is a popular medium for social interaction and self expression among young people, there is great potential to incorporate social media into suicide prevention efforts. Suicide is the fourth leading cause of death among youths ages 10 to 24 (Eaton et al., 2012), the third leading cause of death among adolescents and young adults ages 15 to 24 (McIntosh, 2009), and the tenth leading cause of death across age groups in the United States (McIntosh, 2009). Although suicide rates have decreased among older adults and the elderly since 1950, youth suicide has tripled (Cutler, Glaeser, & Norberg, 2001). According to the Youth Risk Behavior Surveillance conducted in 2011, 16% of high school students had seriously considered attempting suicide, 13% had made a suicide plan, and 8% had made at least one suicide attempt in the year prior to the survey (Eaton et al., 2012). Approximately 2% of high school students reported making a suicide attempt that required medical attention in 2011 (Eaton et al., 2012). A major risk factor among suicide victims is a prior suicide attempt (Gould et al., 2003), and young people attempt suicide at a much greater rate than adults, with an estimated 100 to 400 attempts for each completed youth suicide, depending on how a suicide attempt is defined (McIntosh, 2009; Cutler, Glaeser, & Norberg, 2001). Further, more than a quarter (29%) of high school students reported experiencing symptoms of depression for

at least two consecutive weeks in 2011 (Eaton et al., 2012), which is alarming given that depressive disorders are the most common psychopathology among young suicide victims (Gould et al., 2003). There is great need for suicide prevention efforts targeted toward young people.

In Durkheim's (1951) extensive sociological study of suicide, he explained suicide as a social phenomenon. Durkheim suggested that suicide occurs when an individual fails to integrate in society, experiences a significant life change, or acts on a perceived religious or political commandment. Durkheim believed that suicide involved an interaction between the individual and his or her social group and that social disconnectedness was the primary reason that certain cultures consistently had higher rates of suicide than others.

Cutler, Glaeser, and Norberg (2001) examined theories of youth suicide, proposing several explanations for youth suicidal behavior. Strategic suicide was described as an attempt designed to get attention from others and not to actually cause death; examples might include a cry for help from an unhappy adolescent or an adolescent's way of punishing or embarrassing others. Depression suicide was viewed as an adolescent seeking an immediate way to end feelings of unhappiness. They described the theory of instrumentality, postulating that youth unhappiness and suicidal ideation results in suicide when the means to complete suicide are available. The contagion theory was also explained, suggesting that suicides are imitative—youth suicidal behavior may stem from grief over a peer's suicide or may be the result of learning that suicide is an option for resolving conflict, stress, and unhappiness.

Using national data on youth risky behavior, Cutler, Glaeser, and Norberg tested hypotheses related to these theories of youth suicide using a series of regression models. They found that youth unhappiness was related to suicide attempts and other risky behaviors, and adolescents who knew someone who attempted suicide were three times more likely to also attempt suicide. Even when feelings of depression were accounted for, other variables such as parent-child interaction, involvement in activities, and contagion still influenced suicidal behavior. Protective factors against depression included youth membership in clubs and activities and less time spent watching television. Results supported theories that implicate youth depression in suicidal behavior and provided evidence of social contagion theory.

Prevention Efforts

Young people attempt suicide far more often than they complete it (McIntosh, 2009), leaving room for intervention before it is too late. Some adolescent suicide attempts have been described as “strategic,” suggesting that the intent is not to die but to invoke a reaction from others (Cutler, Glaeser, & Norberg, 2001). Adolescents who use social media to express suicidal ideation and intent may be receptive to intervention, especially if posting on a social networking site is an attempt to reach out for support or gain attention from others.

To date, there are no known studies of suicide prevention training specifically targeting youths using social media. Reviews of suicide prevention research indicate a variety of approaches across multiple systems, with limited evidence of success for any one type of program. Community-based suicide prevention efforts include crisis centers and hotlines, firearm restriction initiatives, and guidance for media on coverage of suicide

cases to prevent contagion (Gould, Greenberg, Velting, & Shaffer, 2003). Studies of media education programs have shown conflicting evidence (Crowley, Kilroe, & Burke, 2004), but may be a promising approach to reducing suicide rates and suicide imitations (Gould et al., 2003). School-based suicide prevention programs may have any of the following components: administrative policies and procedures, education for staff, student curricula and skills training, school-wide screenings, and connections with community resources (Gould et al., 2005; Kalafat & Elias, 1995). Kalafat and Elias (1995) described two primary goals of school-based suicide prevention programs:

- “1. That persons who may come into contact with potentially suicidal adolescents can more readily identify them, know how to respond to them initially, know how to obtain help for them rapidly, and are consistently inclined to take such action.
2. That troubled adolescents are aware of and have immediate access to helping resources and may be more inclined to seek such help as an alternative to suicidal behavior” (p. 128).

Studies of school-based suicide awareness curricula, designed to increase help seeking and encourage adolescents to identify at-risk peers, have had inconsistent results. In some studies, attitudes toward suicide intervention worsened among groups of students (Crowley, Kilroe, & Burke, 2004). Skills training programs, designed to teach coping and problem solving skills, reduce risk factors, and increase protective factors among at-risk youth, have shown emerging evidence of success. However, little is known about which program components have been effective in increasing mental health outcomes and suicide has not been evaluated as an outcome (Crowley, Kilroe, & Burke, 2004; Gould et al., 2003). School-wide screenings have been used to identify students at

elevated risk of suicide for targeted intervention, although they tend to yield a high number of false-positives (Meehl & Rosen, 1955) and may not be the preferred approach to suicide prevention among school principals (Gould et al., 2003).

Gatekeeper training has also been used as a suicide prevention approach in communities and schools. These programs train “specific groups of people to identify people at high risk for suicide and then to refer those people for treatment” (Isaac et al., 2009, p. 261). For example, community programs have trained health professionals working with children to inquire about suicidal ideation and make mental health referrals as appropriate, and school-based gatekeeper programs have trained school staff and students to identify and refer at-risk students (Crowley, Kilroe, & Burke, 2004; Gould et al., 2003). Gatekeeper programs date back to the 1960s and vary widely in terms of targeted participants, settings, and the content and length of training (Isaac et al., 2009).

Isaac, Elias, Katz, Belik, and Deane (2009) conducted a systematic review of gatekeeper programs, finding nine peer-reviewed studies that trained participants in suicide or depression and presented pre- and post-training outcomes. Programs under study targeted school staff, adolescents and young adults, community members, employees working with high risk populations, military personnel, and primary care physicians. Seven of the studies showed improvements in skills, attitudes, and knowledge among adolescents, school staff, and other gatekeeper participants. Six of the studies reviewed documented decreases in suicidal ideation, attempts, or completed suicides for the population under study, including Aboriginal Australian youths, military personnel, and communities in specific geographic areas. Only one study targeting adolescents and young adults reported a decrease in suicide attempts and gestures in the

youth population. However, these results should be interpreted in light of the following facts: there was no reduction in suicide completions, suicidal behaviors were already documented to follow a cyclical pattern within the population, and additional program components were in place. Isaac et al. concluded that gatekeeper programs have been shown to successfully train gatekeepers in knowledge, skills, and attitudes, and in some cases reduce suicidal behaviors among specific populations. However, research to date has not been successful in targeting the effects of gatekeeper programs outside of the context of more comprehensive suicide prevention efforts (Isaac et al., 2009).

Peer helper, also referred to as peer gatekeeper, programs specifically involve training students to refer and support friends who are at elevated risk of suicide (Gould et al., 2003). Isaac et al.'s review documented improvements in the skills, attitudes, and knowledge about suicide among youth gatekeepers but found minimal evidence that these programs resulted in decreased suicidal ideation and behavior among youth populations.

For example, Stuart, Waalen, and Haelstromm (2003) evaluated how students already participating in school-based peer helper programs could be trained to assess suicide risk with peers. The purpose of the study was to evaluate the extent to which the program increased students' knowledge of suicide, increased their positive attitudes toward suicide intervention, and developed their empathetic listening and suicide risk assessment skills based on questionnaires and responses to hypothetical scenarios. Training was administered over two half-days, and then outcomes were assessed immediately (post-test) and three months later (follow-up). Results indicated significant differences on the pre-test compared to the post-test and follow-up in the expected directions in all areas assessed. Advances in skills in assessment and communication and

suicide knowledge were maintained between post-test and follow-up. There was a significant decrease in favorable attitude toward suicide intervention between post-test and follow-up, though attitude toward intervention was still significantly more favorable at follow-up compared to pre-test. Despite its weak design, this study suggests that adolescents in peer helper roles may gain skills, knowledge, and positive attitude toward suicide intervention when specific training in these areas is provided.

The importance of peer helpers cannot be understated, as adolescents are more likely to express their suicidal thoughts and feelings to peers than to adults (Kalafat & Elias, 1995). In a study of ninth and eleventh-grade students, Kalafat and Elias (1992) found that 30% of adolescents knew someone who was definitely considering suicide, but only one in four told an adult. Adolescents were more likely to talk to their peers than tell an adult. Alarming, 25% of the ninth-graders reported that they did nothing after finding out that someone they knew was suicidal.

There is increasing recognition that suicide prevention and intervention efforts should be delivered through contemporary means. A number of organizations dedicated to suicide prevention have websites and Facebook pages with resources and information for individuals in need of help for themselves or someone else (e.g., National Suicide Prevention Lifeline at www.suicidepreventionlifeline.org, Society for the Prevention of Teen Suicide at www.sptsusa.org). The American Association of Suicidology's website provides information about common warning signs of suicide (e.g., suicidal ideation, substance abuse, withdrawal from others, feelings of hopelessness, changes in mood). There are additional signs indicating acute risk for suicide, including a person making threats to hurt or kill him or herself, talking about wanting to hurt or kill him or herself,

seeking means for harm such as firearms or drugs, and/or talking or writing about death, dying, or suicide. Friends, family, and other concerned parties are encouraged to take immediate action when warning signs, especially indications of acute risk, are observed (American Association for Suicidology, 2012). Suicidal individuals and concerned parties can find this information readily available online, though it requires them to be looking for it.

Further, the National Suicide Prevention Lifeline recently launched an online chat service pilot program, Lifeline Chat, in addition to their phone hotline (National Suicide Prevention Lifeline, 2012). Local agencies are also expanding their hotline phone services to reach populations who might be more likely to access services online. For example, the Maryland Youth Crisis Hotline Network is currently running a grant-funded pilot program with an online chat service available during afterschool hours for youth in crisis (Maryland Youth Crisis Hotline Network, 2012). Suicide prevention organizations are finding additional ways to support the tech-savvy younger generation by providing resources and access to adult help online.

Over the last decade, there have been a number of broader efforts to teach kids to use technology safely. Children's online activity may be unsupervised and many adults may not understand how their children are communicating online. Resources are available to parents and teenagers on a number of issues, including preventing inappropriate conduct, contact, and content (OnGuard Online, 2012). Media attention has focused on some aspects of technology that pose risks for children, including overuse of technology, cyberbullying, exposure to inappropriate images and content, and failure to protect personal information and identity. Parents are encouraged to supervise their

child's technology use and talk to their kids about keeping personal information safe and being accountable for their online activity. Government programs and other non-profit groups have created websites, workshops, and free materials regarding these issues and prevention strategies for parents and children, with many of these resources available online (e.g., Common Sense Media, Net Smartz, ConnectSafely, Cyberbully411, iKeepSafe, GetNetWise) (OnGuard Online, 2012).

As young people come to spend more time on social networking sites, we have the opportunity to expand suicide prevention efforts by targeting social media users. Social networking platforms may provide more opportunities to identify warning signs if they are in writing and posted publicly. When individuals post suicidal thoughts or threats on online, the size of the audience is greatly increased, with potentially everyone in the individual's online social network seeing the information as soon as it is posted or whenever they next log into the site. With suicidal content in writing and a large audience of potential viewers, there are opportunities for intervention that should not be overlooked.

Training on safe use of technology should be expanded to include ways to help children understand their potential to look out for suicidal individuals on social networking sites. Early intervention efforts could involve training children to identify information posted online that suggests a person is in danger of harm and to alert adults to the situation. There are opportunities to teach children to be sensitive to the emotional distress of others and educate them on specific helping behaviors to intervene with friends in crisis. An online tool like Facebook's new suicide intervention feature facilitates the report of suicidal content, but it is unclear how many users know about it or

would use it. Thus in some cases, training adolescents on how to get help for a friend may even be as simple teaching them to click a button.

Method

Research Design

On a questionnaire, participants were asked about the frequency with which they viewed suicidal content on Facebook and their typical reactions to such content. An experiment was embedded within the questionnaire to evaluate whether providing persuasive messages about what to do for a suicidal friend would affect how participants responded to scenarios about a friend who posted suicidal content on Facebook. Using a 2x2x2 factorial design, participants were randomly assigned to groups based on three factors: exposure or no exposure to suicidal prevention information, exposure or no exposure to a suicide intervention story, and exposure or no exposure to a pre-test assessment. The first two factors tested interventions hypothesized to increase concern for the person in the scenarios, intentions to get help, and knowledge of what to do, and the third tested for possible sensitizing effects of the pre-test. Based on the last digit of their phone number being even or odd, half of participants were assigned to receive or not receive exposure to pre-test scenarios. Participants were also randomly assigned to one of four groups: information, story, combined (information and story), and control. For more information on random assignment procedures, see Figure 1 and refer to the next section.

Four research questions guided this study: (1) What percentage of adolescents on social networking sites are exposed to suicidal content posted by friends? (2) After reading a Facebook post indicating that a friend may be suicidal, how concerned do

adolescents feel and what actions do they take? (3) Will exposure to treatments and the pre-test condition affect how participants respond to post-test scenarios about friends posting suicidal content and their perceived knowledge of what to do? And (4) will there be interactions between treatments?

Procedure

Teenagers between the ages of 13 and 18 who lived in the United States were recruited on Facebook and through local listservs encouraging parents to ask their teens to participate in the study. A Facebook page called “Teens on the Lookout” was developed to advertise the study and invite adolescents to participate (Appendix A). On the page, Facebook users were able to find information about the study, click on a link to take the survey on Survey Monkey, use Facebook’s “Like” feature to link the page to their own profile (intended to drive other adolescents to the study site), and access contact information for the National Suicide Prevention Lifeline. A total of 248 Facebook users “liked” the study’s page during the data collection period (78% ages 13 to 24, 95% living in the U.S., 73% female).

Using Facebook’s advertising tools, advertisements (ads) encouraging participation were run through Facebook for approximately three months. Ads were targeted toward adolescent Facebook users (ages 13 to 18) who lived in the United States and others within their social networks. Ads included links to the Facebook page, links to a post about the survey on the Facebook page, and links directly to the online survey (sample of ads shown in Appendix B). During the data collection period, there were 3,161 clicks on the study ads. The study was also advertised by email through local listservs. Listserv moderators were emailed and asked to make information about the

study available to their communities and encourage parents to ask their teenage children to participate. Groups targeted included public, private, and charter school communities, parent and teacher organizations, community and neighborhood groups, and education networks.

The questionnaire was administered using a secure online account on Survey Monkey. At the beginning of the questionnaire, participants were asked to read an assent form explaining the purpose, procedure, potential risks and benefits, and confidentiality (assent form and items shown in Appendix C). Of the people who accessed the online questionnaire, 95% provided assent to participate and were asked to provide demographic information (i.e., age, gender, ethnicity, state of residence). People who identified their age as 12 or younger (3%) or 22 or older (3%)¹ and who identified their residence as outside of the U.S. (2%) were automatically directed to the end of the questionnaire.

Participants who were eligible to participate and elected to continue to the next page were then asked to answer questions about how often they have seen people post things on Facebook: that concern or worry them, about hurting themselves, and about suicide. Participants were also asked if they knew what to do if they were worried about a friend who might be suicidal. Next, as a reasonable approximation to random assignment, participants were asked to select whether the last digit of their phone number was even or odd; participants selecting even numbers were not presented with the pre-test scenarios and questions, and participants selecting odd numbers were presented with the pretest scenarios and questions.

¹ Only data from participants ages 13 to 18 were included in the analyses.

Half of participants (those who selected an odd number) were asked to answer questions based on two pre-test scenarios about a Facebook user who posted suicidal content. For each scenario, they rated how concerned they would feel for the person and how likely they were to take specific next steps (i.e., continue what I was doing, contact the person, tell another friend, tell my parents, tell an adult at school, report the post to Facebook, use the National Suicide Prevention Lifeline, call 911). They also had the option to indicate in free response format what they would do under “other.” For both scenarios, participants also indicated how often they had seen a person post something “like this” before.

Survey Monkey was programmed to use simple random assignment to assign 25% of participants to four groups: information, story, combined (story and information), and a control condition. The information group received suicide prevention information about how a good friend can take steps to prevent teen suicide using a bulleted format (Appendix D). The story group was exposed to a short story about a teenager who served as a social model by telling an adult about another teen’s suicidal Facebook posts (Appendix E). The combined group was exposed to both types of messages, the story followed by the information. Participants in the control group were exposed to a filler message about how to create secure online passwords (Appendix F).

Following treatment, all participants were asked to read two more short scenarios about a Facebook user who posted suicidal content, rate their level of concern for the person, and rate how likely they would be to take specific next steps. On the last question, participants were again asked if they knew what to do if they were worried

about a friend who might be suicidal. Responses to these questions were used as outcome measures in the experiment.

At the end of the survey, participants were thanked for their participation. A suicide prevention hotline phone number and website link were provided as resources for additional information. Participants were invited to return to the Facebook page at a later date to read about study findings. Refer to Figure 2 for a flow chart of skip patterns and random assignment within the questionnaire.

Participants

A sample of 299 adolescents ages 13 to 18 with Facebook profiles participated in this study by answering at least the first survey question beyond providing demographic information. The sample included 209 females and 77 males (13 unidentified gender) from 44 states (24% from Maryland). The majority of participants were ages 15 and 16 (47%) and self-identified their ethnicity as White (67%). Table 1 provides participant demographic information. Of the 299 participants who were eligible to participate and began the survey, 221 participants responded to the final question on the survey (74% completion rate). A sample of 259 participants received exposure to one of the treatment or control conditions (Information 23%, Story 29%, Combined 24%, Control 24%), and 239 participants responded to at least the first post-treatment item on the questionnaire (8% attrition rate). As described next, once missing data were imputed, data from 245 participants were available for the experimental analyses.

Missing Data

Because a substantial fraction of participants who began the questionnaire failed to complete it (26%) or left some items unanswered, a multiple imputation procedure was used to impute missing data (Baraldi & Enders, 2010; Sinharay, Stern, & Russell, 2001). Multiple imputation was performed in SPSS for numeric variables that had missing values, with all numeric variables included as predictors. The procedure was set to create 100 new data sets with imputed values because fewer sets may not be sufficient (Graham, Olchowski, & Gilreath, 2007). In order to include covariates in outcome analyses without decreasing the sample size, missing data were also imputed for pre-test variables only answered by a random half of participants². With missing data imputed, the number of participants with usable data was 299 for the first and second research questions and 245 for the third and fourth research questions³. SPSS pooled the information available across the 100 data sets for correlations and means, but the program did not pool other statistics. Unless otherwise noted, pooled means and correlations are reported, and other statistics reported are the median values of the 100 data sets. Results reported are based on the data with multiple imputation using the procedure just described. Results using data with multiple imputation should be less biased than results using listwise deletion or other traditional methods of coping with missing data (Enders, 2010). When the results using multiple imputation were compared to the results using listwise deletion for missing data, there were no differences in statistical significance for any of the tests reported in subsequent sections.

Measures

² Because subjects were randomly assigned to receive pre-test questions or not, the pre-test data are in principle missing completely at random (Little & Rubin, 2002).

³ The sample size decreased from 299 to 245 for the analysis of variance tests due to fewer participants completing the survey to the point of random assignment to groups.

Questionnaire items and scales were developed specifically for the present research. The initial questionnaire was piloted with a convenient sample of 5 adolescents. The adolescents were asked to complete the protocol online, provide feedback about questionnaire length and clarity of questions, and make suggestions for revisions. These adolescents reported that it took 5 to 10 minutes to complete the protocol. Their suggestions were used to make a few minor changes to the questionnaire. When asked how likely they would be to take certain actions after reading a suicidal post, the initial questionnaire included four response options (*definitely not*, *unlikely*, *probably*, or *definitely*). Based on feedback from these adolescents, a response option of *maybe* was added for these items. A transition statement between the treatment and post-test scenarios was also added based on their feedback.

Demographic characteristics. Participants were asked to report their age, gender, ethnicity, and state of residence. Respondents between the ages of 13 and 18 living in the United States were eligible for participation and included in the results. Participants primarily self-identified as White (67%). Due to limited ethnic diversity within the sample, results were not examined by ethnic group. The majority of participants (69%) were female, and there was an unexpected statistically significant correlation between gender and exposure to one of the treatment groups. For no known reason, female participants were more likely than male participants to receive exposure to the information condition ($\phi = .16, p < .05$). Gender was not included in the analysis of variance models because it was not an orthogonal factor, there were relatively few male participants, and there were no hypotheses about main effects or interactions for gender.

This unexpected association of gender with the information treatment may be due to chance.

Hypothetical scenarios. Scenarios about friends posting suicidal statements on Facebook were written based on examples of suicidal posts in news articles and the investigator's professional experience on a school district crisis team working with students and staff following student suicides. Each scenario began with the statement, "The questions below are based on this scenario: You are checking your Facebook newsfeed and see that someone posted this status." The hypothetical statuses posted by friends were: (a) "It's all become too much to handle. Bye friends, I'll miss you but you'll be better off without me," (b) "I'm just trying to find a way to end it all," (c) "I'm so sick of all this crap. That's why I'm saying goodbye now and leaving it all behind," and (d) "Nothing matters now, I won't be around much longer." The pre-test scenarios, presented to half of participants, included the statements listed in (a) and (b). The post-test scenarios, presented to all participants, included the statements listed in (c) and (d).

Treatment and control conditions. Resources provided to the treatment and control groups were readily available online. The suicide prevention information was adapted from online suicide prevention resources available to teenagers on the websites of the National Suicide Prevention Lifeline and the Society for the Prevention of Teen Suicide. The story about a successful suicide intervention was adapted from an ABC news story about a teenager who saved the life of a Facebook friend after reading the person's suicidal post (Newcomb, 2012). The original story was simplified, religious references were removed, and the name of the teenager involved was changed to be gender neutral. The control message about creating secure online passwords was from an

article called “Password Tips for Teens from Common Sense Media,” available online from Common Sense Media.

Exposure to troubling and/or suicidal content. Five items on the questionnaire asked participants about their exposure to troubling and/or suicidal content on Facebook. Participants were asked to provide answers on a four-point scale (1 = *Never*, 2 = *Sometimes*, 3 = *Often*, 4 = *Very often*) for each item. All participants were asked the first three items: “People I know post things on Facebook that concern or worry me,” “People I know post things on Facebook about hurting themselves,” and “People I know post about suicide (taking their own life) on Facebook.” Half of participants were asked to answer two additional items, which used the same scale and referred to the two pre-test hypothetical scenarios (“I’ve seen people I know post something like this before”).

Level of concern. After reading the hypothetical scenarios about an individual posting suicidal content on Facebook, participants were asked to rate their level of concern for that person on a four-point scale, “How concerned or worried would you feel for this person?” (1 = *No concern*, 2 = *A little concern*, 3 = *Some concern*, 4 = *A lot of concern*). Participants exposed to the pre-test condition were asked to rate their level of concern following the first two scenarios. All of participants were asked to rate their level of concern following the two post-test scenarios.

Participants’ levels of concern on the two pre-test scenarios were statistically significantly correlated. The two pre-test items were averaged ($M = 3.46$, $SD = .49$) to form a scale ($\alpha = .31$) and used as a covariate in the outcome analyses. The two responses to post-test scenarios were also statistically significantly correlated and

averaged ($M = 3.46$, $SD = .58$) to form a scale ($\alpha = .53$) and used as a dependent variable in the analysis of variance model. Refer to Table 2 for correlations among these items.

Intentions to Get Help. On the Intentions to Get Help scale, participants were asked to indicate the likelihood that they would get adult help after reading scenarios about an individual posting suicidal content on Facebook. Participants rated the likelihood that they would take each of the actions listed on a five-point scale (1 = *Definitely not*, 2 = *Unlikely*, 3 = *Maybe*, 4 = *Probably*, 5 = *Definitely*). There were five items that involved getting help from adults (i.e., “Tell my parents,” “Tell an adult at school,” “Report the post to Facebook,” “Use the National Suicide Prevention Lifeline,” “Call 911”).

For the 2 pre-test scenarios, the 10 items (5 items per scenario) were highly correlated and formed a scale ($\alpha = .84$). The 10 items were averaged ($M = 2.69$, $SD = .77$) and used as covariates in the experiment. For the two outcome scenarios, responses to the same 10 items also formed a scale ($\alpha = .92$) and were averaged ($M = 2.75$, $SD = 1.01$) for use as an outcome measure in the analysis of variance model. Refer to Tables 3 and 4 for correlations among these items.

Perceived knowledge. All participants were asked to indicate their agreement (1 = *No*, 2 = *Not really*, 3 = *Sort of*, 4 = *Yes*) with the statement “I know what to do if I’m worried about a friend who might be suicidal” at the beginning and end of the survey. This item was used to explore the effects of treatment exposure on participants’ perceived knowledge about what to do for a potentially suicidal friend. The two items were significantly correlated ($r = .61$, $p < .01$).

Refer to Table 5 for means and standard deviations of items measuring exposure to suicidal content, level of concern, Intentions to Get Help, and perceived knowledge of what to do for suicidal friends.

Additional exploratory measures. On pre-test and outcome scenarios, participants were offered the option to provide a free-form response under “other” when asked what they would do after seeing a person post suicidal content on Facebook. These responses were reviewed and classified according to a set of themes that emerged from the review.

Results

Question 1. The first research question explored how often adolescents on Facebook read suicidal posts. Responses ranged from 1 (*Never*) to 4 (*Very often*) for each of five items measuring exposure to suicidal content. Percentages and confidence bounds are reported in Table 6. For percentages close to 0% or 100%, confidence bounds are not symmetrical about the estimate (Fleiss, Paik, & Levin, 2003). The sample size for these results is 299. The majority of participants (65%) indicated that people they know sometimes post things on Facebook that concern or worry them (11% reported often or very often, 24% reported never). When asked about seeing people post on Facebook about hurting themselves, about half of participants (53%) indicated that this never happens, 41% reported that this sometimes happens, and 6% indicated that this often or very often happens. The majority of participants (70%) reported that they have never seen people post about suicide, but 27% reported that this sometimes happens and 3% reported that this often or very often happens. Age and gender were not significantly correlated with any of these variables.

Participants were also presented examples of suicidal posts and asked to rate how often they had viewed similar posts. For the first example (“It’s all become too much to handle. Bye friends, I’ll miss you but you’ll be better off without me”), the majority of participants (61%) reported that they had never seen a post like that, but 33% had sometimes seen a similar post and 6% had often or very often seen a similar post. For the second example (“I’m just trying to find a way to end it all”), 44% of participants reported that they had never seen a similar post, 42% reported that they had sometimes, and 14% reported that they had often or very often seen a similar post. The correlation between these two items was significant ($r = .47, p < .01$), indicating that participants were likely to answer these items consistently. There was no significant correlation between responses to either of these two items and either age or gender.

Question 2. The second research question addressed how adolescents typically respond when seeing a post indicating that a person might be suicidal. Note that these questions were asked before any of the experimental treatments were applied. Percentages and confidence bounds are reported in Table 7. The sample size for these results is 299. Participants’ emotional reactions to the suicide-related scenarios were measured by the items asking about level of concern that were described earlier. Responses ranged from 1 (*No concern*) to 4 (*A lot of concern*) for each item. On average, participants expressed that they would feel some or a lot of concern for the persons posting suicidal content on Facebook in the two scenarios *before* any exposure to any treatments ($M = 3.46, SD = .49, \text{Range } 1.50 \text{ to } 4.00$). The majority of participants reported feeling some concern, and less than 1% reported feeling no concern for the

persons in the scenarios. There were no significant correlations between level of concern and participants' age or gender.

Participants' behavioral responses to the suicide-related scenarios were measured by the items asking about their intentions to get adult help that were described earlier. Responses ranged from 1 (*Definitely not*) to 5 (*Definitely*) for item. After reading the two pre-test scenarios, participants were asked, "What would you do next?" Responses to the 10-item Intentions to Get Help scale were examined, as well as participants' responses to other single items, including continuing what they were doing, contacting the person who wrote the post, and telling another friend after seeing the post. Participants on average indicated that they would be "unlikely" to or "maybe" take action to get adult help for persons posting suicidal content in the pre-test scenarios ($M = 2.69$, $SD = .78$, Range 1.00 to 5.00).

On pre-test items, participants expressed greater intentions to tell their parents ($M = 3.13$) than to use other means to get adult help, such as telling an adult at school ($M = 2.82$), reporting the post to Facebook ($M = 2.30$), using the National Suicide Prevention Lifeline ($M = 2.80$), or calling 911 ($M = 2.42$). However, participants expressed the greatest intentions to directly contact the person who posted the suicidal content ($M = 3.96$). They were also more likely to tell a friend ($M = 3.37$) than tell an adult. Refer to Table 8.

Prior to exposure to the pre-test scenarios (if applicable) and treatment, participants were also asked to respond to the item, "I know what to do if I'm worried about a friend who might be suicidal" to measure their perceived knowledge about what to do for a potentially suicidal friend. Responses ranged from 1 (*No*) to 4 (*Yes*) for this

item. On average, participants responded “sort of” to “yes” at pre-test ($M = 3.16$). At pre-test, 43% of participants reported “yes,” 36% reported “sort of,” 16% reported “not really,” and 5% reported “no.” Most participants (79%) reported that they at least somewhat knew what to do if worried about a suicidal friend.

Questions 3 and 4. To examine the third research question, a three-factor analysis of covariance fixed-effects model (ANCOVA) was used to determine the main effects of treatments on outcomes. One factor involved exposure to information, the second factor involved exposure to a story, and the third factor involved exposure to a pre-test assessment. Covariates (dependent variables measured at pre-test) were used in the models. The sample size for these analyses is 245. Each factor had two levels: exposure or no exposure. It was hypothesized that exposure to treatments would increase participants’ level of concern and intentions to get help from adults when responding to the scenarios. It was also hypothesized that exposure to treatments would increase participants’ perceived knowledge about what to do when worried about a friend who might be suicidal. Exposure to pre-test scenarios and questions was also hypothesized to affect outcomes due to a potential sensitizing effect; however, there were no significant main effects of the pre-test condition or interactions between the pre-test condition and other treatments on any of the dependent variables. In the following paragraphs and tables referenced, results are collapsed across levels of pre-test exposure.

There were no significant main effects or interactions of treatments on participants’ level of concern. These results indicated that the level of concern for the persons in the scenarios was not affected by exposure to the information ($d < .01$) or story

($d = .02$)⁴. As reported earlier, participants as a whole reported that they would feel some or a lot of concern for the persons in the pre-test scenarios before exposure to any treatments, and the distribution of responses for the level of concern item is skewed left. Group means and standard errors are reported in Table 10.

The main effect of exposure to the story on the Intentions to Get Help scale was statistically significant ($d = .15, p < .05$), with those participants exposed to the story involving a role model who took action reporting greater intentions to get adult help than those participants not exposed to the story. For the information condition, there were no significant main effect ($d = .02$) or interactions on the Intentions to Get Help scale⁵. Group means and standard errors are reported in Table 11.

The main effect of exposure to information on participants' perceived knowledge was significant ($d = .09, p < .05$), with those participants exposed to the information reporting greater perceived knowledge of what to do for a suicidal friend than those participants not exposed to the information. For the story condition, there were no significant main effect ($d = -.06$) or interactions on participants' perceived knowledge. There was a non-significant interaction between the story and information treatments, suggesting that the information may have been slightly more effective in increasing participants' perceived knowledge when participants were not also exposed to the story. Group means and standard errors are reported in Table 12.

⁴ Effect sizes were calculated using the following formula: $d = \frac{M(Treatment) - M(Control)}{SD(Control)}$. Data from Table 9 were used.

⁵ It should be noted that there was a significant interaction between the information and story treatments when the analysis of variance was run without covariates. Without covariate adjustments, the story was more effective in increasing participants' intentions to help when participants were not also exposed to the information. See Appendix G (Tables 14-16) for group statistics without covariate adjustments.

In sum, exposure to the story on its own had the greater effect on increasing participants' intentions to get help, and exposure to the information on its own had the greater effect on increasing participants' perceived knowledge of what to do. There were no significant main effects or interactions of treatments on participants' level of concern for suicidal persons in the scenarios. The pre-test condition did not affect any of the outcomes. The interactions between treatment combinations were not statistically significant, or in other words, the effect of exposure to one treatment did not depend on exposure to other treatments. Please refer to Tables 17 to 19 in Appendix H for ANCOVA tables.

Exploratory analyses. Participants had the option of entering a free-form response under "other" when asked what they would do given scenarios at pre-test and post-test. Thirty-seven participants typed in an answer for at least one of the scenarios. These answers were reviewed and organized by theme in Table 13. A number of participants indicated that they would contact the parents of the person who wrote the post. Many responses reflected the participants' intentions to directly contact the person who wrote the post in order to convince them not to commit suicide, provide comfort or support, and/or find out more information. Some participants indicated that they would talk to the person, see them in person, or offer their help, and some responses included specific examples of what they would say to talk to the person out of suicide, such as telling the person how much they care or trying to convince the person that there is a reason to live. Several participants referenced their own experiences with suicidal thoughts or their own experiences helping a friend in need. Some participants reported that they would first find out more information about the situation before deciding what

actions to take, indicating that they thought the post was ambiguous and would not want to overreact. Several participants suggested that their actions would depend on who the person was; for example, whether it was a close friend or a person known for being “dramatic.” A few participants wrote that they thought the hypothetical posts were song lyrics or that the posts indicated the person was deactivating from Facebook.

Discussion

This study explored the extent to which teenagers view suicidal content on Facebook, their typical reactions to it, and the effectiveness of using informative messages to encourage adolescents to get help for friends who might be suicidal. In a sample of 299 teenage Facebook users, nearly half of participants reported sometimes, often, or very often seeing people post about hurting themselves in Facebook. Approximately one-third of teenagers reported seeing people post about suicide sometimes or more often, but when given specific examples of suicidal posts, the numbers were even higher. It seems that many teenagers are exposed to potentially suicidal content at least sometimes, if not more often, on Facebook.

When given hypothetical scenarios about people posting suicidal messages on Facebook, I thought that teenagers might minimize the situation or not take the posts seriously. However, teens reported feeling a high level of concern or worry for the people in the scenarios. Given that teens felt concerned after reading the scenarios, next I wanted to know what they might do in those situations. Most teens reported that they would contact the person who wrote the post directly or talk to another friend about it. Teens indicated were less likely to take actions to get adult help, and if they did get adult help, they were more likely to tell their parents than access other adult resources. It is not

surprising, given the heightened importance of peer relations during adolescence (Steinberg, 2005), that teens expressed greatest intentions to address the situation among peers. Further, this finding is consistent with earlier research indicating that teenagers were more likely to talk to a peer than an adult when worried about a friend who might be suicidal (Kalafat & Elias, 1992).

By offering an open-ended response option, I gained some insight into what teens might do or say to the person who wrote the post. Teens wrote about their intentions to dissuade the person from committing suicide, provide comfort and support, and gather more information. Teens also reported that they might remind the person of reasons to live and tell the person how much others care. Some teens felt that the posts were too ambiguous to warrant action without first finding out more information. Overall, it was apparent that most teens participating in this study thought the posts were worrisome, wanted to help, and intended to contact the person directly or consult with a friend.

The purpose of the experiment was determine if teens would be influenced to take actions to get adult help by exposure to suicide prevention resources, including information and a story about a successful suicide intervention. I was able to examine the effects of exposure to suicide prevention information, a successful suicide intervention story, and a combination of these treatments on teens' level of concern for the person, intentions to get help when given scenarios, and perceived knowledge of what to do. Exposure to a pre-test assessment did not affect any of the outcomes. There were no effects of treatments on participants' level of concern, possibly due to a ceiling effect of this variable that may have reduced sensitivity to the interventions. Given that teens participating in this study expressed high concern for the persons in the initial scenarios,

treatment aimed to their increase concern was probably not necessary. However, if faced with a similar situation outside of the experimental condition, teens might have a different emotional experience. Future studies could explore teens' emotional reactions to distressing posts in more natural contexts.

Teens who read the story about a successful suicide intervention report increased intentions to get adult help when given scenarios. Social learning theory suggests that modeling desired behaviors, particularly when those behaviors are reinforced during the observation, is an effective way to teach new behaviors (Bandura, 1971). In the present study, the story depicted a social role model who actively sought adult help for a person who posted suicidal content on Facebook. The role model was reinforced for taking these actions by receiving a thank you message from the person helped as well as being interviewed by a news channel for heroic actions. After reading the story, teens in this study were more likely to report that they too would take steps to get adult help given similar situations.

There was no added effect on teens' intentions to get help when suicide prevention information was also provided. However, teens exposed to suicide prevention information reported that they were more likely to know what to do if worried about a potentially suicidal friend. Suicide prevention information appeared to only affect participants' perceived knowledge about what to do. Other studies have also found that information has minimal effect whereas social-learning interventions are more effective in changing behaviors (Botvin, 1990). If the purpose of providing suicide prevention resources to teenagers is to change their behaviors, it seems more effective to present to them a social role model who is reinforced for engaging in the desired behaviors.

Limitations

The results of this study may not be generalizable to the entire population of adolescent Facebook users, especially given the limited diversity of the sample. Participants were primarily White females and may have been particularly similar in characteristics due to recruiting within participants' social networks on Facebook. In other words, the present sample is not necessarily representative of any well-defined population. The majority of users who liked this study's Facebook page were also female. While adult Facebook users are primarily female (Duggan & Brenner, 2013), it is unclear if adolescent females are more likely to use Facebook than adolescent males. Lenhart, Madden, Macgill, and Smith (2007) found that compared to adolescent boys, adolescent girls were more likely to engage in certain behaviors on social media sites, such as communicating with friends, posting pictures, and writing blogs. In addition, it is possible that certain adolescents were more likely to volunteer to participate in the study, based on prior experience with suicidal friends or their own tendencies toward suicidal ideation and behaviors or related problems. However, random assignment to groups was designed to minimize the influence of external factors when measuring the effects of treatment on outcomes, so these potential limitations on generalizability are not limitations with respect to internal validity.

Since this study's outcome measures were based on responses to questions and scenarios, the effects of treatment may not be generalizable to real life situations in which adolescents view suicidal content online. Other studies of youth suicide prevention programs have reported similar challenges. For example, increased knowledge about suicide and improved attitudes toward intervention do not necessarily yield decreases in

suicidal behavior among young people (Isaac et al., 2009). In the current study, the intervention of a social role model was effective in increasing participants' intentions to get help adult help when given scenarios, but this effect may not generalize to their actual responses given a real-life situation. Further, getting adult help for friends in these situations may or may not be related to decreases in youth suicidal behavior.

Virtues and Implications

This study was conducted using a sample of the population of interest, as only participants on Facebook who met sample specifications were recruited. A key virtue of this study was its experimental design. The main effects of treatments and interactions between treatments were examined using a fully-crossed factorial design, allowing the effectiveness of treatments to be determined. In addition, using multiple methods to assess the effects of treatment was helpful in explaining how suicide prevention resources influenced outcomes in this study. Results indicated that exposure to suicide prevention information increased adolescents' perceived knowledge about what to do, but not their intentions to get adult help. I also found that exposure to social role models did not increase perceived knowledge, but did increase participants' intentions to get adult help after reading scenarios.

This study fills a gap in youth suicide prevention research by demonstrating the potential for social media to be used in the identification and referral of suicidal adolescents. Facebook, the most popular social networking site among teenagers (Madden et al., 2011), has recently become involved in suicide prevention efforts by developing a suicidal content reporting tool for its users (Forbes, 2011). No research to

date has examined the potential for training teens to use this referral tool and take other actions to alert adults to suicidal content posted by peers on Facebook.

Most teens have access to social media and regularly use technology in their social interactions (e.g., Rideout, Foehr, & Roberts, 2010). This study explored an innovative way to deliver suicide prevention resources with little cost, reaching a population that may not seek out traditional mental health services and encouraging peer intervention. It has long been recognized that peer helpers are crucial to the identification of suicidal adolescents, given that young people are more likely to confide in their friends when experiencing suicidal thoughts (Kalafat & Elias, 1995). This study extended traditional research on peer helper training by providing information online that specifically addressed how teens could intervene when warning signs were viewed on social media. The results imply that teens on Facebook are interested in helping a person who may be suicidal and they are most likely to handle the situation among peers. Persuasive messages were used to encourage peer intervention for suicidal friends by suggesting multiple ways that teens could access adult support. Providing a social role model who sought adult help and was recognized for taking these actions was effective in increasing teens' intentions to get help when given similar situations.

Social media play an integral role in the lives of teenagers today. Many teens spend time on the same major social networking sites, creating opportunities for us to provide mental health resources and encourage peer intervention in far-reaching and cost-efficient ways. Further, there is evidence that social role modeling is effective in increasing a number of desirable behaviors, and these effects may be maximized on social networking sites where teens are constantly watching the behaviors of other teens

in their networks (e.g., Bond et al., 2012). Further research exploring how youth suicide prevention efforts can be integrated with social media is warranted.

Table 1

Demographic Characteristics of Participants (N=299)

Item	Response	<i>n</i>	%
Gender	Female	209	70
	Male	77	25
	Other/Don't wish to say	12	4
	Missing	1	<1
Ethnicity	White	200	67
	Black or African American	18	6
	Hispanic or Latino	36	12
	Asian	8	3
	American Indian/Alaska Native	11	3
	Native Hawaiian or Other Pacific Islander	1	<1
	Other/Don't wish to say	23	8
	Missing	2	1
Age	13	42	14
	14	50	17
	15	66	22
	16	75	25
	17	47	16
	18	19	6

Note. There were no notable differences in the demographic composition of the subset of participants ($N=245$) that completed the questionnaire to the point of random assignment to groups (and were included in the analysis of variance tests).

Table 2

Correlations Between Level of Concern Variables for Scenarios at Pre-test and Post-test (N=299)

Variable	2.	3.	4.
1. Scenario 1 (pre)	.21	.29	.34
2. Scenario 2 (pre)	-	.37	.31
3. Scenario 3 (post)		-	.36
4. Scenario 4 (post)			-

Note. Tabulation made after multiple imputation for missing data (pooled correlation statistics reported). The correlation between concern regarding Scenario 1 and Scenario 2 is significant at the .05 level. All other correlations are significantly different from zero at the .01 level.

Table 3

Correlations Between Pre-test Scenario Responses to Intentions to Get Help Items (N=299)

Item	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Tell parents (1)	.66	.32	.40	.57	.74	.51	.37	.29	.48
2. Tell adults (1)	-	.39	.51	.54	.54	.75	.38	.45	.45
3. Facebook (1)		-	.48	.37	.24	.34	.62	.42	.40
4. Use NSPL (1)			-	.61	.40	.48	.44	.82	.52
5. Call 911 (1)				-	.52	.54	.47	.58	.76
6. Tell parents (2)					-	.66	.49	.45	.65
7. Tell adults (2)						-	.54	.56	.64
8. Facebook (2)							-	.52	.67
9. Use NSPL (2)								-	.66
10. Call 911 (2)									-

Note. Tabulation made after multiple imputation for missing data (pooled correlation statistics reported). All correlations significant at $p < .001$.

Table 4

Correlations Between Post-test Scenario Responses to Intentions to Get Help Items (N=299)

Item	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Tell parents (1)	.72	.38	.44	.49	.73	.52	.28	.39	.41
2. Tell adults (1)	-	.44	.58	.61	.53	.78	.37	.55	.52
3. Facebook (1)		-	.53	.49	.28	.36	.80	.51	.43
4. Use NSPL (1)			-	.74	.31	.44	.46	.80	.58
5. Call 911 (1)				-	.38	.50	.44	.62	.74
6. Tell parents (2)					-	.64	.35	.42	.45
7. Tell adults (2)						-	.44	.61	.59
8. Facebook (2)							-	.60	.53
9. Use NSPL (2)								-	.72
10. Call 911 (2)									-

Note. Tabulation made after multiple imputation for missing data (pooled correlation statistics reported). All correlations significant at $p < .001$.

Table 5
Means and Standard Deviations for Items Measuring Exposure to Suicidal Content, Level of Concern, Intentions to Get Help, and Perceived Knowledge of What to do for Suicidal Friends (N=299)

Question Stem or Scale	Item(s)	<i>M</i>	<i>SD</i>
People post things that...	Concern or worry	1.90	.68
	Hurting themselves	1.55	.66
	Suicide	1.33	.56
I've seen a post like this...	"Too much to handle"	1.45	.63
	"A way to end it all"	1.72	.77
How concerned would you feel?	Pre-test	3.46	.49
	Post-test	3.47	.57
I know what to do if I'm worried...	Pre-test	3.16	.89
	Post-test	3.37	.73
Intentions to Get Help scale	Pre-test	2.69	.78
	Post-test	2.77	1.01

Note. Tabulation made after multiple imputation for missing data (pooled means are reported; standard deviations reported are median values). Responses ranged from 1 to 4, except the Intentions to Get Help scale that ranged from 1 to 5.

Table 6

Frequency With Which Teenagers Report Seeing Facebook Posts That May Reflect Suicide-Related Content: Percentage Distribution for Each Type of Post (N=299)

Item		%	90% Conf. Int.	
			Lower	Upper
People post things on Facebook...				
That concern or worry me	Never	24	20	28
	Sometimes	65	60	69
	Often	7	5	10
	Very often	4	3	6
About hurting themselves	Never	53	48	58
	Sometimes	41	36	46
	Often	4	2	6
	Very often	2	1	4
About suicide	Never	70	66	74
	Sometimes	27	23	31
	Often	2	1	4
	Very often	1	0	2
I've seen a person post something like this before...				
"Too much to handle"	Never	61	56	65
	Sometimes	33	29	38
	Often	5	3	7
	Very often	1	0	2
"A way to end it all"	Never	44	39	49
	Sometimes	42	37	47
	Often	12	9	15
	Very often	3	2	5

Note. Tabulation made after multiple imputation for missing data (pooled data reported). Confidence bounds for percentages close to 0 or 100% are not symmetrical around the point estimates.

Table 7

Teenagers' Report of Level of Concern and Intentions to Get Help on Suicidal Scenarios and Their Perceived Knowledge of What to Do: Percentage Distribution for Each Item (N=299)

Item or Scale	Response	%	90% Conf. Int.	
			Lower	Upper
Level of concern (pre-test)	No concern	<1	0	2
	A little concern	8	6	11
	Some concern	59	54	64
	A lot of concern	32	28	37
Level of concern (post-test)	No concern	<1	0	2
	A little concern	12	9	15
	Some concern	46	41	51
	A lot of concern	41	36	46
Intentions to get help (pre-test)	Definitely not	15	12	19
	Unlikely	51	46	56
	Maybe	27	23	31
	Probably	6	4	9
	Definitely	1	0	2
Intentions to get help (post-test)	Definitely not	22	18	26
	Unlikely	38	33	43
	Maybe	26	22	30
	Probably	12	9	15
	Definitely	2	1	4
Perceived knowledge (pre-test)	No	5	3	8
	Not really	16	13	20
	Sort of	36	32	41
	Yes	43	38	48
Perceived knowledge (post-test)	No	1	0	2
	Not really	11	8	14
	Sort of	37	33	42
	Yes	51	46	56

Note. Tabulation made after multiple imputation for missing data (pooled data reported). Confidence bounds for percentages close to 0 or 100% are not symmetrical around the point estimates.

Table 8

Teenagers' Report of Intentions to Get Help from Adults and Take Other Actions After Reading Suicidal Scenarios: Means, Standard Deviations, and Standard Errors of the Means of Pre-test Responses (N=299)

What would you do next...	<i>M</i>	<i>SD</i>	<i>SEM</i>
Contact the person	4.0	0.91	.07
Tell a friend	3.4	1.03	.08
Tell my parents	3.1	1.13	.08
Tell an adult at school	2.8	1.13	.08
Use the NSPL	2.8	1.13	.09
Call 911	2.4	1.06	.09
Report post to Facebook	2.3	0.98	.08
Continue what I was doing ^a	2.2	0.94	.08

Note. Tabulation made after multiple imputation for missing data (pooled means and standard errors reported; median standard deviations reported). Response options ranged from 1 (definitely not) to 5 (definitely). NSPL refers to the National Suicide Prevention Lifeline.

^a Lower value was desirable.

Table 9

Means by Group: Participants' Level of Concern, Intentions to Get Help, and Perceived Knowledge of What To Do for Suicidal Friends

Dependent Variable	Statistic	Information	Story	Control	Total
Level of Concern (Scale 1 to 4)	<i>M</i>	3.51	3.52	3.51	3.50
	<i>SD</i>	.54	.59	.58	.57
	<i>SEM</i>	.05	.05	.07	.04
	<i>N</i>	124	137	63	245
Intentions to Get Help (Scale 1 to 5)	<i>M</i>	2.74	2.89	2.72	2.76
	<i>SD</i>	1.03	1.13	1.12	1.06
	<i>SEM</i>	.09	.10	.14	.07
	<i>N</i>	124	137	63	245
Perceived Knowledge (Scale 1 to 4)	<i>M</i>	3.47	3.37	3.41	3.39
	<i>SD</i>	.67	.74	.69	.73
	<i>SEM</i>	.06	.06	.09	.05
	<i>N</i>	124	137	63	245

Note. Tabulation made after multiple imputation for missing data (median values reported for all statistics). This table is collapsed across levels of the pre-test exposure factor. The means in this table are produced without adjustment for the covariate, but there are minimal differences between the adjusted and unadjusted means.

Table 10

Teenagers' Concern for Persons in Suicidal Scenarios: Covariate Adjusted Means and Standard Errors for Groups Exposed or Not Exposed to the Suicide Prevention Information and Successful Suicide Intervention Story (N=245)

	Story:	
	Yes	No
Information:		
Yes	3.51 (.07)	3.51 (.07)
No	3.50 (.06)	3.46 (.07)

Note: Tabulation made after multiple imputation (pooled statistics are reported). Means are covariate adjusted. Standard error in parentheses.

Table 11

Teenagers' Intentions to Get Help for Persons in Suicidal Scenarios: Covariate Adjusted Means and Standard Errors for Groups Exposed or Not Exposed to the Suicide Prevention Information and Successful Suicide Intervention Story (N=245)

	Story:	
	Yes	No
Information:		
Yes	2.75 (.11)	2.69 (.11)
No	2.95 (.10)	2.62 (.10)

Note: Tabulation made after multiple imputation (pooled statistics are reported). Means are covariate adjusted. Standard error in parentheses.

Table 12

Teenagers' Perceived Knowledge of What To Do for Suicidal Friends: Covariate Adjusted Means and Standard Errors for Groups Exposed or Not Exposed to the Suicide Prevention Information and Successful Suicide Intervention Story (N=245)

	Story:	
	Yes	No
Information:		
Yes	3.43 (.08)	3.55 (.09)
No	3.32 (.07)	3.29 (.08)

Note: Tabulation made after multiple imputation (pooled statistics are reported). Means are covariate adjusted. Standard error in parentheses.

Table 13

After Reading a Suicidal Post on Facebook, What Would You Do? Participants' Qualitative Responses Organized by Theme

Theme	Examples of Participant Responses
Talk them out of it	Talk them out of it Give reason for them not to do it <ul style="list-style-type: none"> • “Tell them its not worth it” • “Tell them their life means a lot to me” • “Try to convince them not to... and show them how much we care for them”
Talk to them or see them	Talk to them or see them <ul style="list-style-type: none"> • “Talk them through it” • “I might call them” • “Stay with them as much as I can” Talk to them or seem them and offer help/provide comfort <ul style="list-style-type: none"> • “Try to talk to the person... to see what’s wrong and to see if there is any way I could help them” • “I would try to talk to that person to see how I can help them” Talk to them before deciding what to do <ul style="list-style-type: none"> • “I could talk to them myself before I did anything drastic like call 911 or suicide prevention” • “Just talk to them try and make them happy, if things get out of hand tell my mom and dad”
Reference to their own experiences	“I know the feeling so I could talk to them” “I deal with this stuff a lot” “Try my best to help them out because I feel the same way sometimes”
Find out more information	“That post is kind of vague, so I would talk to them about what is was” “I would ask them what do they mean” “I would see what’s up”
What I would do depends on...	“It depends how close of a friend it is really, and if anyone has responded to them at all yet.” “It depends on if I knew the person or thought they were serious” “I would talk to them and take the necessary actions from there”
Tell their parents	Call, contact, or tell their parents
Other	“Pray to the lord God for them” <ul style="list-style-type: none"> • “Fix it” • “A lot of people I know take things like suicide and self injury lightly and as a joke. You never know who’s serious and who’s out for attention.” • “Contact a friend of theirs” • “Almost sounds like there deleting there face book” • “I would most likely direct them to the HELpline as well” • “I would tell an adult I trust and assume the worst so I could help out this friend of mine” • “Leave it it’s lyrics” • “Leaving it all behind could maybe mean they just want to start new”

Note. Table includes responses from 38 participants.

Figure 1

		Suicide Prevention Information (B)	
		No (1)	Yes (2)
Suicide Intervention Story (A)	No (1)	Control	Information Only
	Yes (2)	Story Only	Combined (Information and Story)

Figure 1. Random assignment of participants to groups. A third factor also involved presentation or no presentation of pre-test scenarios.

Figure 2

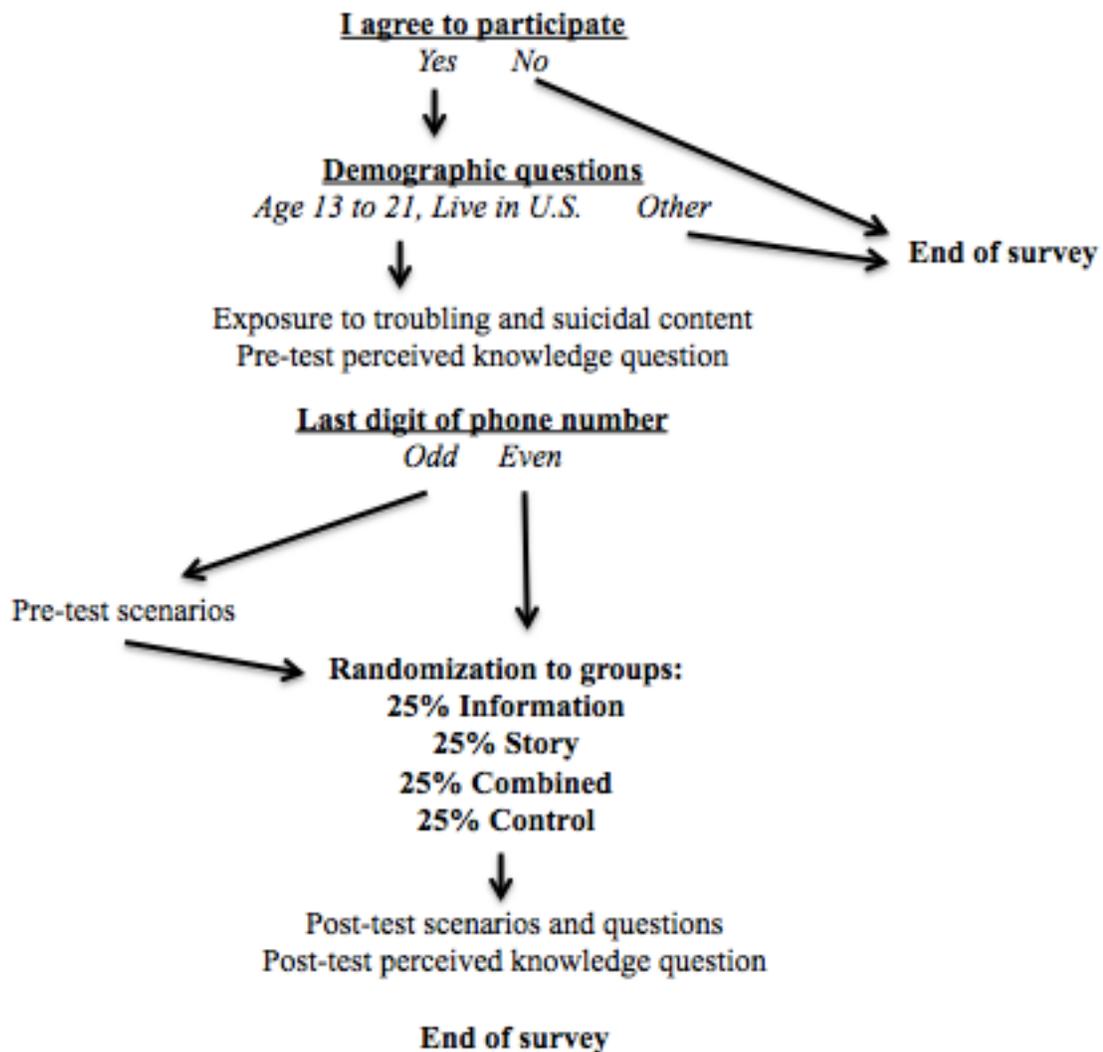
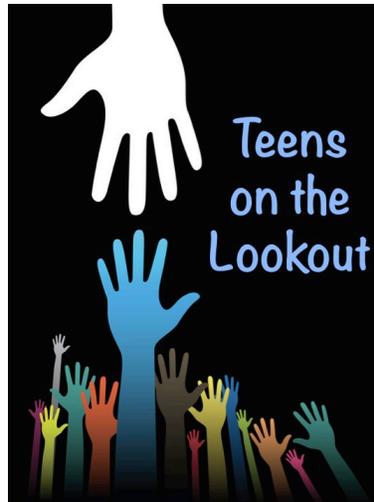


Figure 2. Flow chart of items on the questionnaire. Note that only participants ages 13 to 18 were included in the analyses.

Appendix A

Facebook Page



Name

Teens on the Lookout

About

Participate in our online study about friends helping friends on Facebook!

Description

We invite you to participate in a study that will help us understand how teens can be on the lookout for Facebook friends who might be feeling suicidal.

Teens who wish to participate are asked to click on the link to our online survey, which takes 10 to 15 minutes to complete. You will be asked if your friends post about suicide, how you feel about it, and what you might do. At the end of the study, we will compile what everyone tells us and post general findings here on our Facebook page.

Your answers will be anonymous and will NOT be linked to your personal information or associated with your Facebook account.

This research is being conducted by Jill Berger (jmberger@umd.edu) and Gary Gottfredson (ggottfre@umd.edu) at the University of Maryland, College Park. If you have questions, concerns, or complaints, please contact us. More information about our study and your rights as a participant is available on the first page of the survey.

Website

(Link to survey via Survey Monkey)

Appendix B

Sample of Advertisements for Recruiting Participants on Facebook

Teens on the Lookout



We need your input! Take our survey on youth suicide prevention.

Teen Suicide Prevention



Take our quick online survey about teens looking out for friends on Facebook.

Teens on the Lookout



Tell us what you think! Take our quick survey on teen suicide prevention.

Appendix C

Questionnaire

Teens on the Lookout - Assent to Participate in Research Study

- Purpose:** This is a research study being conducted by Jill Berger and Gary Gottfredson at the University of Maryland, College Park. We invite you to participate in this survey to help us understand how teens can help other teens who might be suicidal through Facebook.
- Procedures:** This is an online survey. It will probably take 10 to 20 minutes to complete. We will ask about the kinds of things friends post on Facebook, how you feel about it, and what you might do. You might also get information about what you can do to help friends who might be suicidal and how teens are using sites like Facebook. We will ask about some heavy things like what you might do if you thought a friend was going to hurt him or herself. You can stop the survey at any time, for any reason.
- Potential risks:** The main risk of being in this research is that someone might see your answers to survey questions while you are taking the survey. Because the survey takes place on the Internet, there is always the possibility that someone could intercept your answers.
- Potential benefits:** You won't receive any reward for participating in this study. Your answers will help us understand how Facebook can be used to support other teenagers who need help.
- Confidentiality:** We won't ask for your name or personal information. Your answers will be anonymous and will not be linked to your Facebook account.
- Questions and your rights:** If you have questions or concerns, please contact the investigators:
- | | |
|---|--|
| <p>Dr. Gary Gottfredson
 ggottfre@umd.edu
 (301) 405-2892</p> | <p>Jill Berger
 jmberger@umd.edu
 (757) 621-5621</p> |
|---|--|
- Questions about your rights as a research participant and complaints should be directed to University of Maryland College Park Institutional Review Board Office:
- | | |
|---|---|
| <p>1204 Marie Mount Hall
 College Park, Maryland, 20742</p> | <p>irb@umd.edu
 301-405-0678</p> |
|---|---|

This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects. **Please print and keep this page in case you have questions later.**

1. I agree to participate in this research study.
 - a. Yes [persons clicking yes are taken to a survey page]
 - b. No [persons clicking no are taken to a goodbye/thank you page]

--Page break--

2. My age is:
 - a. 12 or younger [skip to goodbye/thank you page]
 - b. 13
 - c. 14
 - d. 15
 - e. 16
 - f. 17
 - g. 18
 - h. 19
 - i. 20
 - j. 21
 - k. 22 or older [skip to goodbye/thank you page]

--Page break--

1. I am:
 - a. Male
 - b. Female
 - c. Other or don't wish to say
2. My ethnicity is:
 - a. American Indian or Alaska Native
 - b. Asian
 - c. Black or African American
 - d. Hispanic or Latino
 - e. Native Hawaiian or Other Pacific Islander
 - f. White
 - g. Other or don't wish to say
3. I live in:
(Drop down of U.S. states and "outside of U.S." [skip to good/bye thank you page])

--Page break--

4. People I know post things on Facebook that concern or worry me:
 - a. Never
 - b. Sometimes
 - c. Often
 - d. Very often

5. People I know post things on Facebook about hurting themselves:
 - a. Never
 - b. Sometimes
 - c. Often
 - d. Very often

6. People I know post about suicide (taking their own life) on Facebook:
 - a. Never
 - b. Sometimes
 - c. Often
 - d. Very often

7. I know what to do if I'm worried about a friend who might be suicidal.
 - a. No
 - b. Not really
 - c. Sort of
 - d. Yes

8. The last digit of my phone number is:
 - a. Even (0, 2, 4, 6, 8) [skip questions 9-14 and go directly to group assignment]
 - b. Odd (1, 3, 5, 7, 9)

--Page break--

The questions below are based on this scenario:

You are checking your Facebook newsfeed and see that someone posted this status:
"It's all become too much to handle. Bye friends, I'll miss you but you'll be better off without me."

9. How concerned or worried would you feel for this person?
 - a. No concern
 - b. A little concern
 - c. Some concern
 - d. A lot of concern

10. What would you do next? I would...

Item	Definitely not	Unlikely	Maybe	Probably	Definitely
Continue what I was doing	5	4	3	2	1
Contact the person	1	2	3	4	5
Tell another friend	1	2	3	4	5
Tell my parents	1	2	3	4	5
Tell an adult at school	1	2	3	4	5
Report the post to Facebook	1	2	3	4	5
Use the National Suicide Prevention Lifeline	1	2	3	4	5
Call 911	1	2	3	4	5

Other: (Fill in)

11. I've seen a person I know post something like this before:

- a. Never
- b. Sometimes
- c. Often
- d. Very often

The questions below are based on this scenario:

You are checking your Facebook newsfeed and see that someone posted this status:

"I'm just trying to find a way to end it all."

12. How concerned or worried would you feel for this person?

- a. No concern
- b. A little concern
- c. Some concern
- d. A lot of concern

13. What would you do next? I would...

Item	Definitely not	Unlikely	Maybe	Probably	Definitely
Continue what I was doing	5	4	3	2	1
Contact the person	1	2	3	4	5
Tell another friend	1	2	3	4	5
Tell my parents	1	2	3	4	5
Tell an adult at school	1	2	3	4	5
Report the post to Facebook	1	2	3	4	5
Use the National Suicide Prevention Lifeline	1	2	3	4	5
Call 911	1	2	3	4	5

Other: (Fill in)

14. I've seen a person I know post something like this before:

- a. Never
- b. Sometimes
- c. Often
- d. Very often

--Page break--

Random assignment to groups (See Appendices B, C, D)

--Page break--

You have almost finished the survey! There are just a few more questions to answer.

The questions below are based on this scenario:

**You are checking your Facebook newsfeed and see that someone posted this status:
*“I’m so sick of all this crap. That’s why I’m saying goodbye now and leaving it all behind.”***

15. How concerned or worried would you feel for this person?

- No concern
- A little concern
- Some concern
- A lot of concern

16. What would you do next? I would...

Item	Definitely not	Unlikely	Maybe	Probably	Definitely
Continue what I was doing	5	4	3	2	1
Contact the person	1	2	3	4	5
Tell another friend	1	2	3	4	5
Tell my parents	1	2	3	4	5
Tell an adult at school	1	2	3	4	5
Report the post to Facebook	1	2	3	4	5
Use the National Suicide Prevention Lifeline	1	2	3	4	5
Call 911	1	2	3	4	5

Other: (Fill in)

The questions below are based on this scenario:

**You are checking your Facebook newsfeed and see that someone posted this status:
*“Nothing matters now, I won’t be around much longer.”***

17. How concerned or worried would you feel for this person?

- No concern
- A little concern
- Some concern
- A lot of concern

18. What would you do next?

Item	Definitely not	Unlikely	Maybe	Probably	Definitely
Continue what I was doing	5	4	3	2	1
Contact the person	1	2	3	4	5
Tell another friend	1	2	3	4	5
Tell my parents	1	2	3	4	5
Tell an adult at school	1	2	3	4	5
Report the post to Facebook	1	2	3	4	5
Use the National Suicide Prevention Lifeline	1	2	3	4	5
Call 911	1	2	3	4	5

Other: (Fill in)

19. I know what to do if I’m worried about a friend who might be suicidal.

- No
- Not really

- c. Sort of
- d. Yes

--Page break--

Thank you for participating in our study!



Suicide is never the answer.

Please get help if you or someone you know is thinking about hurting themselves.

Check out our Facebook page (Teens on the Lookout) to get more information on suicide prevention and read about what we find from this study.

If you have questions or concerns, please contact us:

Jill Berger
jmberger@umd.edu

Gary Gottfredson
ggottfre@umd.edu

Appendix D

Suicide Prevention Information

Good Friends Always Get Help!

If your friend is thinking about suicide, the most important thing to do is to talk immediately with an adult you trust. Your Facebook friends might post something that concerns you and makes you wonder if they are feeling suicidal. You might be the only one who sees that post or cares enough to do something. Getting help for your friends can make all the difference in the world.

Here are some things that you should know and do if you are worried about a friend:

I should be worried about suicide if my friends talk or write about...

- Wanting to die
- Hurting themselves
- Having no reason to live
- Feeling trapped
- Being a burden to others

If I'm worried about someone being suicidal, I should ALWAYS GET HELP!

So, what can I do?

- Take it seriously
- Tell a parent, adult at school, or other trusted adult
- Use the National Suicide Prevention Lifeline phone or online chat
- Tell Facebook using their "Suicide Reporting" link

National Suicide Prevention Lifeline (Available 24-7!)

- Call or chat about your own feelings or if you're worried about a friend
- Call 1-800-273-TALK (8255)
- Chat online at www.suicidepreventionlifeline.org

Why should I do something?

- Friends have to look out for each other because teens post things on Facebook that they don't share with adults.
- Talking to the right person about suicidal thoughts and feelings can mean the difference between life and death.
- I can save a friend's life!

If I'm worried about someone being suicidal, I should ALWAYS GET HELP!

The suicide prevention information provided here is adapted from the websites of the National Suicide Prevention Lifeline and the Society for the Prevention of Teen Suicide.

Appendix E

Suicide Intervention Story

Good Friends Always Get Help!

If your friend is thinking about suicide, the most important thing to do is to talk immediately with an adult you trust. Your Facebook friends might post something that concerns you and makes you wonder if they are feeling suicidal. You might be the only one who sees that post or cares enough to do something. Getting help for your friends can make all the difference in the world.

Here is a story about how one teenager saved the life of a Facebook friend by caring enough to get help:

A Teen Saves a Life on Facebook

There was a scary status update on Blake's Facebook newsfeed. Blake was worried because Morgan wrote "it was time" and thanked some friends. It was like Morgan was saying goodbye to everyone. Blake only knew Morgan through soccer but Blake wanted to help anyway.

Blake didn't want Morgan to get hurt. Blake sent a message to Morgan on Facebook and offered to help. Blake told Morgan that the National Suicide Prevention Lifeline had people to talk to who could help sort things out. But Blake didn't think this was enough.

Blake knew about a way to tell Facebook if you were worried about something suicidal on a friend's profile. It only took a couple minutes. Blake used Facebook's Help Center to report suicidal content on Morgan's profile. Then Blake knew you should talk to your parents and together they called 911.

The next day, Blake got a text from Morgan that said thank you. Blake was happy that Morgan was safe. Later someone wanted to interview Blake about helping Morgan.

"I was worried that Morgan would get in trouble if I told someone. I didn't want to cause trouble, because I don't know Morgan that well. But Morgan really needed someone to care, and I'm glad I got help."

Blake and Morgan hope that other teens look out for their friends. When it comes to suicide, take it seriously. Teens don't always know the right thing to say, but getting help is always the right thing to do. You should tell a trusted adult, and you can use the Suicide Prevention Lifeline phone number and online chat.

Based on a true story from ABC News

Appendix F

Control Message

Password Tips for Teens from Common Sense Media

Having a safe password is important to keep your online information secure. Below you'll find some helpful tips on how to make and use strong passwords to keep your personal information safe!

DO'S

- DO share your password only with your parents.
- DO create passwords with at least eight characters.
- DO use combinations of letters, numbers, and symbols, which are harder to crack than just words.
- DO change your password regularly – at least every six months.

DON'T'S

- DON'T give a password to anyone else – not even your friends.
- DON'T use passwords that are easy for people you know to guess, like your nickname or your pet's name.
- DON'T use any private identity information in your password.
- DON'T use a word in the dictionary as a password.

Know what kinds of private identity information not to include in your password:

- Full (first and last) name
- Email address
- Passwords
- Credit card numbers
- Mother's maiden name
- Postal address
- Phone numbers
- Calling card numbers
- Social Security number

Use Common Sense!

From Common Sense Media (www.common sense media.org)

Appendix G

Table 14

Teenagers' Intentions to Get Help for Persons in Suicidal Scenarios: Means and Standard Errors for Groups Exposed or Not Exposed to the Suicide Prevention Information and Successful Suicide Intervention Story

Information	Statistic	Story	
		Yes	No
Yes	<i>M</i>	2.72	2.77
	<i>SD</i>	1.12	.93
	<i>SEM</i>	.14	.12
	<i>N</i>	63	61
No	<i>M</i>	3.03	2.48
	<i>SD</i>	1.12	.95
	<i>SEM</i>	.13	.12
	<i>N</i>	74	63

Note. Tabulation made after multiple imputation for missing data (median values reported for all statistics). The means in this table are produced without adjustment for the covariate. This table is collapsed across levels of the pre-test exposure factor.

Table 15

Teenagers' Level of Concern for Persons in Suicidal Scenarios: Means and Standard Errors for Groups Exposed or Not Exposed to the Suicide Prevention Information and Successful Suicide Intervention Story

Information	Statistic	Story	
		Yes	No
Yes	<i>M</i>	3.51	3.50
	<i>SD</i>	.58	.50
	<i>SEM</i>	.07	.06
	<i>N</i>	63	61
No	<i>M</i>	3.53	3.47
	<i>SD</i>	.61	.59
	<i>SEM</i>	.07	.07
	<i>N</i>	74	63

Note. Tabulation made after multiple imputation for missing data (median values reported for all statistics). The means in this table are produced without adjustment for the covariate. This table is collapsed across levels of the pre-test exposure factor.

Table 16

Teenagers' Perceived Knowledge of What To Do For a Suicidal Friend: Means and Standard Errors for Groups Exposed or Not Exposed to the Suicide Prevention Information and Successful Suicide Intervention Story

Information	Statistic	Story	
		Yes	No
Yes	<i>M</i>	3.41	3.52
	<i>SD</i>	.69	.65
	<i>SEM</i>	.09	.08
	<i>N</i>	63	61
No	<i>M</i>	3.34	3.27
	<i>SD</i>	.78	.76
	<i>SEM</i>	.09	.10
	<i>N</i>	74	63

Note. Tabulation made after multiple imputation for missing data (median values reported for all statistics). The means in this table are produced without adjustment for the covariate. This table is collapsed across levels of the pre-test exposure factor.

Appendix H

Table 17

Analysis of Covariance for the Effects of Information, Story, and Pre-test Conditions on Participants' Level of Concern for Persons in Suicidal Scenarios (N=245)

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Covariate	1	85.60	.27	.00
(A) Information	1	.28	<.01	.60
(B) Story	1	.13	<.01	.72
(C) Pre-test	1	.48	<.01	.49
A x B	1	.16	<.01	.67
A x C	1	.16	<.01	.69
B x C	1	1.09	<.01	.30
A x B x C	1	.51	<.01	.48
Error (within groups)	236			

Note. Analysis was run after multiple imputation for missing data. Covariate used was participants' level of concern at pre-test. Partial η^2 reported.

Table 18

Analysis of Covariance for the Effects of Information, Story, and Pre-test Conditions on Participants' Intentions to Get Help (N=245)

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Covariate	1	238.6	.50	.00
(A) Information	1	.59	<.01	.44
(B) Story	1	4.29	.02	.04
(C) Pre-test	1	1.33	.01	.25
A x B	1	1.88	.01	.17
A x C	1	.17	<.01	.68
B x C	1	1.00	<.01	.32
A x B x C	1	.39	<.01	.53
Error (within groups)	236			

Note. Analysis was run after multiple imputation for missing data. Covariate used was participants' Intentions to Get Help at pre-test. Partial η^2 reported.

Table 19

Analysis of Covariance for the Effects of Information, Story, and Pre-test Conditions on Participants' Perceived Knowledge (N=245)

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Covariate	1	176.13	.43	.00
(A) Information	1	6.00	.03	.02
(B) Story	1	.35	<.01	.56
(C) Pre-test	1	.29	<.01	.59
A x B	1	1.07	<.01	.30
A x C	1	.65	<.01	.42
B x C	1	.29	<.01	.59
A x B x C	1	1.11	.01	.29
Error (within groups)	236			

Note. Analysis was run after multiple imputation for missing data. Covariate used was participants' perceived knowledge at pre-test. Partial η^2 reported.

References

- American Association for Suicidology. (2012). *Knowing the warning signs*. Retrieved from <http://www.suicidology.org/stats-and-tools/suicide-warning-signs>
- Associated Press. (2012, August 27). *Perry Hall HS student Robert Wayne Gladden Jr. posted Facebook status on murder-suicide*. Retrieved September 1, 2012 from <http://newyork.newsday.com/news/nation/perry-hall-hs-student-robert-wayne-gladden-jr-posted-facebook-status-on-murder-suicide-1.3932316>
- Bandura, A. (1971). *Social Learning Theory*. New York, New York: General Learning Press.
- Baraldi, A., & Enders, C. (2010). An introduction to modern missing data analyses. *Journal of School Psychology, 48*, 5-37.
- Bohannon, J. (2012, September 13). ‘Social voting’ really does rock the vote. *ScienceNOW*. Retrieved from <http://news.sciencemag.org/sciencenow>
- Bond, R., Fariss, C., Jones, J., Kramer, A., Marlow, C., Settle, J., & Fowler, J. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature, 489*, 295-298. doi:10.1038/nature11421
- Bonior, A. (2011, April 30). The suicidal Facebook status: Social networking as a new opportunity for prevention. *Psychology Today*. Retrieved from <http://www.psychologytoday.com/blog/friendship-20/201104/the-suicidal-facebook-status>
- Botvin, G. J. (1990). Substance abuse prevention: Theory, practice, and effectiveness. In M. Tonry & J. Q. Wilson (eds.), *Drugs and crime; Crime and Justice: A Review of Research* (Vol. 13), pp. 461-519. Chicago, IL: University of Chicago Press.
- Common Sense Media & the Benenson Strategy Group. (2009). *Is social networking*

changing childhood? A national poll reveals a disconnect between parents and teens on the role that social networking plays in their lives. Retrieved from

<http://www.common sense media.org/teen-social-media>

Common Sense Media. (2010). *Online privacy: What does it mean to parents and kids?*

Retrieved from <http://www.common sense media.org/about-us/policy-advocacy/research-kids-and-media>

Common Sense Media (2012a). *Social networking for kids.* Retrieved from

<http://www.common sense media.org/website-lists/social-networking-kids>

Common Sense Media (2012b). *Social media, social life: How teens view their digital lives.*

Retrieved from <http://www.common sense media.org/research/social-media-social-life>

Cook, H. (2012, January 19). Net hunt saves suicidal teen. *The Age*. Retrieved from

<http://www.theage.com.au/victoria/net-hunt-saves-suicidal-teen-20120119-1q7aq.html>

Crowley, P., Kilore, J., & Burke, S. (2004). *Youth suicide prevention: Evidence briefing.* Ireland: The Institute of Public Health in Ireland and Health Development Agency.

Cutler, D., Glaeser, E., & Norberg, K. (2001). *Explaining the rise in youth suicide.* In J. Gruber (Ed.), *Risky behavior among youths: An economic analysis.* Chicago: University of Chicago Press.

Davila, J., Hershenberg, R., Feinstein, B., Starr, L., & Gorman, K. (November, 2010). *Is use of social networking tools associated with depressive symptoms among youth?* Paper presented at the 44th annual meeting of the Association for Behavioral and Cognitive Therapies, San Francisco, CA.

Duggan, M., & Brenner, J. (2013, February). *The demographics of social media users – 2012.*

Pew Research Center & American Life Project. Retrieved from www.pewinternet.org.

- Duke, A. (2009, April 3). Demi Moore responds to Twitter suicide threat. *CNN.com/Entertainment*. Retrieved from <http://www.cnn.com/2009/SHOWBIZ/Movies/04/03/moore.twitter.threat/>
- Durkheim, E. (1951). *Suicide: A study in etiology*. The Free Press: New York.
- Eaton, D., Kann, L., Kinchen, S., Shanklin, S., Flint, K., Hawkins, J., Harris, W., Lowry, R., McManus, T., Chyen, D., Whittle, L., Lim, C., & Wechsler, H. (2012). Youth Risk Behavior Surveillance—United States, 2011. *Morbidity and Mortality Weekly Report*, *61*, 1-162.
- Enders, C. (2010). *Applied missing data analysis*. New York, NY: The Guilford Press.
- Fleiss, J., Paik, M., & Levin, B. (2003). *Statistical methods for rates and proportions*. Hoboken, NJ: Wiley-Interscience.
- Fischer, P., Greitemeyer, T., Pollozek, F., & Frey, D. (2006). The unresponsive bystander: are bystanders more responsive in dangerous emergencies? *European Journal of Social Psychology*, *36*, 267-278.
- Foderaro, L. (2010, September 29). Private moment made public, then a fatal jump. *The New York Times*. Retrieved from http://www.nytimes.com/2010/09/30/nyregion/30suicide.html?_r=2
- Forbes (2011, December 15). Facebook offers suicide chat hotline. Retrieved from <http://www.forbes.com/sites/mobiledia/2011/12/15/facebook-offers-suicide-chat-hotline/>
- Gould, M., Greenberg, T., Velting, D., & Shaffer, D. (2003). Youth suicide risk and preventive interventions: A review of the past 10 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, *42*, 386-405.
- Graham, J., Olchowski, A., & Gilreath, T. (2007). How many imputations are really needed?

- Some practical clarifications of multiple imputation theory. *Society for Prevention Research*, 8, 206-213.
- Gutnick, A., Robb, M., Takeuchi, L., & Kotler, J. Always connected: The new digital media habits of young children. *The Joan Ganz Center at Sesame Workshop*.
- Hibbard, L. (2010, November 10). Ashley Billasano, high school student, tweeted 144 times before committing suicide. *Huff Post Education*. Retrieved from http://www.huffingtonpost.com/2011/11/10/ashley-billasano-high-sch_n_1087001.html
- Hinduja, S., & Patchin, J. (2010). Cyberbullying: Identification, prevention, and response. *Cyberbullying Research Center*. Retrieved from <http://www.cyberbullying.us>
- Hoffman, J. (2012, February 24). Trying to find a cry of desperation amid the Facebook drama. *New York Times*, pp. A1. Retrieved from http://www.nytimes.com/2012/02/24/us/facebook-posts-can-offer-clues-of-depression.html?pagewanted=all&_r=0.
- Immordino-Yang, M., McColl, A., Damasio, H., & Damasio, A. (2009). Neural correlates of admiration and compassion. *The National Academy of Sciences of the United States of American*. Retrieved from <http://www.pnas.org/content/106/19/8021>
- Isaac, M., Elias, B., Katz, Y., Belik, S., Deane, P., Enns, W. & Sareen, J. (2009). Gatekeeper training as a preventative intervention for suicide: A systematic review. *Canadian Journal of Psychiatry-Revue Canadienne de Psychiatrie*, 54, 260-268.
- Ito, M., Horst, H., Bittanti, M., Boyd, D., Herr-Stephenson, B., Lange, P., Pascoe, C., & Robinson, L. (2008, November). Living and learning with the new media: Summary of findings from the Digital Youth Project. *The John D. and Catherine T. MacArthur*

- Foundation Reports on Digital Media and Learning*. Retrieved from <http://digitalyouth.ischool.berkeley.edu/report>
- Kalafat, J., & Elias, M. (1992). Adolescents' experience with and response to suicidal peers. *Suicide and Life-Threatening Behavior*, 22, 315-321.
- Kalafat, J., & Elias, M. (1995). Suicide prevention in an educational context: Broad and narrow foci. *Suicide Life Threatening Behavior*, 25, 123-133.
- Kozlov, M., & Johansen, M. (2010). Real behavior in virtual environments: Psychology experiments in a simple virtual-reality paradigm using video games. *Cyberpsychology, Behavior, and Social Networking*, 13, 711-714.
- Lenhart, A., Madden, M., Macgill, A., & Smith, A. (2007, December). Teens and social media. *Pew Internet & American Life Project*. Retrieved from www.pewinternet.org.
- Lenhart, A., Madden, M., Smith, A., Purcell, K., Zickuhr, K., & Raine, L. (2011, November). Teens, kindness and cruelty on social networking sites. Pew Research Center & American Life Project. Retrieved from www.pewinternet.org.
- Little, R., & Rubin, D. (2002). *Statistical analyses with missing data (Second edition)*. Hoboken, NJ: Wiley.
- Madden, M., Lenhart, A., Duggan, M., Cortesi, S., & Gasser, U. (2013, March). Teens and technology 2013. *Pew Research Center & American Life Project*. Retrieved from www.pewinternet.org.
- Manning, R., Levine, M., & Collins, A. (2007). The Kitty Genovese murder and the social psychology of helping: The parable of the 38 witnesses. *American Psychologist*, 62, 555-562.
- Markey, P. (2000). Bystander intervention in computer-mediated communication. *Computers in*

Human Behavior, 16, 183-188.

Maryland Youth Crisis Hotline Network (2012). *About Help4MDYouth*. Retrieved from

www.help4mdyouth.org

McIntosh, J. (2009). U.S.A. Suicide: 2009 Official Final Data. *American Association of*

Suicidology. Retrieved from www.suicidology.org

Meehl, P., & Rosen, A. (1955). Antecedent probability and the efficiency of psychometric signs, patterns, or cutting scores. *Psychological Science*, 52, 194-216.

National Suicide Prevention Lifeline. (2012). *Lifeline Chat*. Retrieved from

www.suicidepreventionlifeline.org

Nauert, R. (2011, February). Time spent on Facebook tied to eating disorders. *Psych Central*.

Retrieved from <http://psychcentral.com/news/2011/02/08/time-spent-on-facebook-tied-to-eating-disorders/23275.html>

Newcomb, A. (2012, February 2). Teen saves life through Facebook. *ABC News*. Retrieved

from <http://abcnews.go.com/blogs/technology/2012/02/teens-save-life-through-facebook/>.

O'Keefe, G., & Pearson-Clarke, K. (2011). Clinical report—The impact of social media on children, adolescents, and families. *The American Academy of Pediatrics*. Retrieved from

www.pediatrics.org/cgi/doi/10.1542/peds.2011-0054

Olson, T., & Wisher, R. (2002). The effectiveness of web-based instruction: An initial inquiry.

International Review of Research in Open and Distance Learning, 3, 1-17.

Olson, R. (2011). Suicide threats on social network sites. *Centre for Suicide Prevention*.

Retrieved from http://www.sprc.org/library_resources/items/suicide-threats-social-networking-sites

- OnGuard Online. (2012). Net cetera: Chatting with kids about being online. *Federal Trade Commission*. Retrieved from <http://onguardonline.gov/features/feature-0004-featured-net-cetera-toolkit>
- Rideout, V., Foehr, U., & Roberts, D. (2010). *Generation M²: Media in the lives of 8- to 18-year-olds*. California: A Kaiser Family Foundation Study.
- Rutkowski, G., Gruder, C., & Romer, D. (1983). Group cohesiveness, social norms, and bystander intervention. *Journal of Personality and Social Psychology*, 44, 545-552
- Sandler, E. (2009, April 6). Can social media help prevent suicide? What is the intersection between social media and suicide prevention? *Psychology Today*. Retrieved from <http://www.psychologytoday.com/blog/promoting-hope-preventing-suicide/200904/can-social-media-help-prevent-suicide>
- Shute, N. (2011, December 13). Facebook aims to prevent suicides with online help. *NPR's Health Blog*. Retrieved from <http://www.npr.org/blogs/health/2011/12/13/143652652/facebook-aims-to-prevent-suicides-with-online-help?ft=1&f=1001>
- Sinharay, S., Stern, H., & Russell, D. (2001). The use of multiple imputation for the analysis of missing data. *Psychological Methods*, 6, 317-329.
- Steinberg, L. (2005). *Adolescence—Seventh Edition*. New York: McGraw Hill.
- Stuart, C., Waalen, J., & Haelstromm, E. (2003). Many helping hearts: An evaluation of peer gatekeeper training in suicide risk assessment. *Death Studies*, 27, 321-333.
- Takeuchi, L. (2011). *Families matter: Designing media for a digital age*. New York: The Joan Ganz Cooney Center at Sesame Workshop.
- The Economist. (2009, February 26). Primates on Facebook: Even online, the neocortex is the

limit. Retrieved from <http://www.economist.com/node/13176775>

The Telegraph. (2009, November 2). Suicidal boy saved by Facebook message. Retrieved from <http://www.telegraph.co.uk/technology/facebook/6484057/Suicidal-boy-saved-by-Facebook-message.html>

Twitter. (2011, March 14). #numbers. [Web log]. Retrieved from <http://blog.twitter.com/2011/03/numbers.html>

Yahoo News. (2012, January 19). Social media helped save teen. Retrieved from <http://au.news.yahoo.com/vic/latest/a/-/newshome/12654787/social-media-helped-save-teen/>